The Builder.

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The Architecture of our Large Provincial Towns.

XV.—ABERDEEN.

ALTHOUGH Aberdeen is by no means one of the largest towns in Great Britain, its population being only about 110,000, there are few which are so interesting and effective in an architectural sense. This is partly owing to the extensive use of granite, which may be said to be the building stone of the district; a material which not only ensures a monumental and dignified effect in street architecture, even when used in the plainest and most unadorned form, but which also exercises an indirect effect on architectural design, as it lends itself so exceedingly well to design of a broad, classic, and monumental character, while at the same time its hard and stubborn quality is a natural check against that over-exuberance of detail which is one of the most frequent sins of modern street architecture. It is not easy to produce gimcrack detail in granite, since the cost of such work would be practically prohibitive.

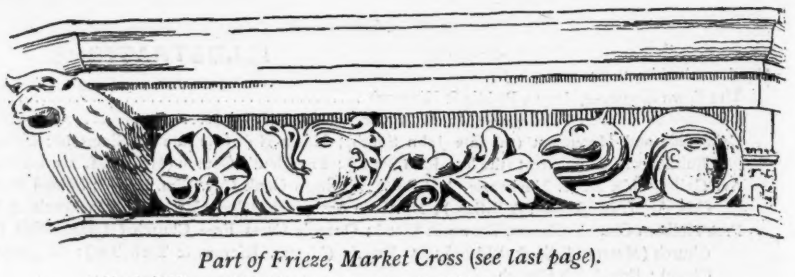
The name of the city is variously written in old documents as Aberdaen, Aberdon (which suggests a connexion with the Don river), Abirden, Aberdaene, or Abyrdene, and many derivations have been offered of the name, none of them very convincing, and with which therefore we need not trouble ourselves. The city has a very long history; its motto of "Bon-Accord" is said to have accompanied the armorial bearings bestowed on it by Bruce in recognition of the successful rising of the citizens against the English in 1298, when "Bon-Accord" was the watchword. In 1336 the city was burned and almost entirely destroyed by Edward III. on his march southward; and being rebuilt a few years afterwards, is supposed to have then got the name of "New Aberdeen," though in reality the history of the city dates further back than that of the adjoining hamlet known as "Old Aberdeen." It should be observed that the name of Old Aberdeen does not refer, as the visitor might naturally suppose, to the older portions of the main city as distinguished from the modern quarter; Old Aberdeen, though now closely associated with Aberdeen proper, is a distinct place, a mile and a half or so from Aberdeen Town House and the neighbouring streets which form portions of the old town of Aberdeen. To it appertained St. Machar's Cathedral, of which we gave an account and illustrations in our series of the Scottish Cathedrals (see *Builder*, Sept. 2, 1893), and also King's College, which still stands out in the fields near the end of King-street.

Aberdeen proper may be described as being roughly an irregular quadrilateral, bounded at the eastern and narrower end by the sea-shore and the links, and on the south by the river Dee; Union-street, running nearly east and west, forming the central line or backbone of the principal portion of the town. The centre of Aberdeen, not geographically (for it is near the south-east corner of the town site), but in the sense of being the point from which things in general radiate, is Castle-street, so-called; it is in fact more like a square or what the French call a *place*, than a street, and on its central axis stands the characteristic Jacobean market cross, a hexagonal erection with a small order of Ionic columns, bunches of flatly-carved foliage rather awkwardly placed in the spandrils of the arcade, and a thin tapering stone shaft rising from the centre of the roof, with a heraldic unicorn as terminal. The cross formerly stood higher up the *place*, opposite the old Tolbooth Tower (now incorporated in the modern Town Hall), and is said to have been then a closed erection, the interior of which was put to practical use as a coach-office; when it was rebuilt in its present situation in 1842, the arches were left open and it became (more suitably) a merely ornamental and historical erection. It dates from the end of the seventeenth century. The half-length portraits of various Scottish and English kings, in the panels of the balustrade, are of very fair execution, and probably by French hands; the band of carved ornament, forming the frieze of the order beneath, shows a curious mingling of Renaissance and Mediæval feeling; we give a sketch of one length of it. The whole is a curiously exotic-looking production to be met with in the streets of a Scotch town. At the east or lower end of Castle-street the Salvation Army has taken up a remarkably assertive portion with a large granite building occupying the whole end of the place, and facing the line of Union-street, called their "citadel," and designed in a combination of castellated and ecclesiastical Gothic; a tower with corbelled-out turrets of weak and lanky appearance over the entrance, while more to the right are large pointed windows of two lights each, with a circular opening over them cutting down very awkwardly close into the extrados of the lower lights. Altogether, the building is much more pretentious than powerful. It is faced at the upper end of the *place* by the small neat-looking building which once was the Athenæum, and now is the Athenæum Hotel; in the centre of the principal face appears a row of four half-engaged Ionic columns carrying an entablature, and looking as if stuck on to the face of the wall; an interesting memorial of the days when some such detail was necessary to stamp a building as the "Athenæum." At the north-west corner of the *place* is an important and dignified building, the Union Bank of Scotland, by the late Mr. Burn, at the angle of King-street; of somewhat stern and bare architecture, with a modillion cornice and attic, its general flatness relieved by the effect of a quadrant colonnade at the angle

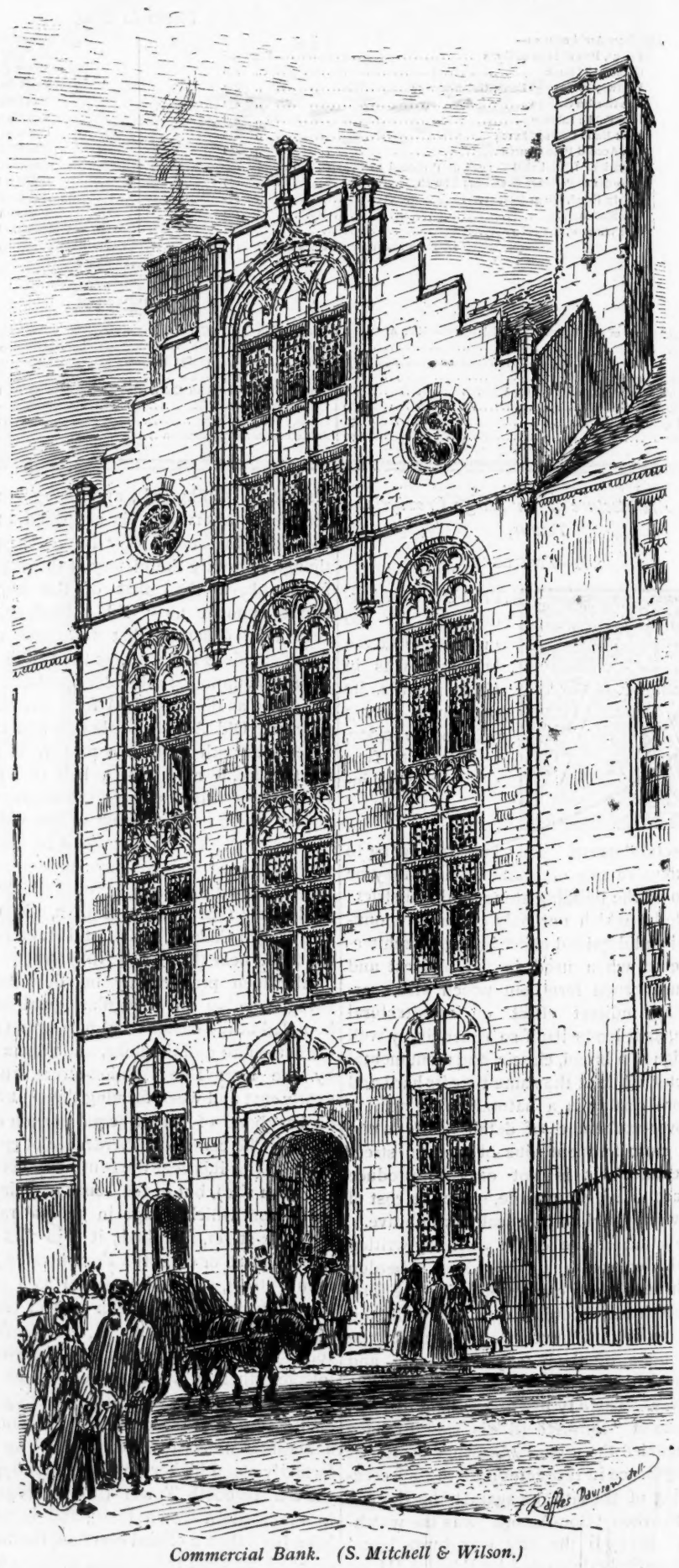
(see lithograph), forming an entrance porch, a feature decidedly effective both in itself and from its prominent position. Castle-street contains one or two examples of the older houses of the town, but nothing else of any special interest.

The Town Hall, or Town House as it is called here, by Messrs. Peddie & Kinnear, the first erection on the north side of Union-street, partly faces Castle-street, but belongs more to Union-street. In regard to its principal façade and tower this building (of which we give double-page plate taken from a large water-colour drawing lent by the present Mr. Peddie) takes a high place among provincial Town Halls, being above the average in vigour and originality of treatment. The ground story shows a series of elliptical arches springing from sturdy columns with plain moulded capitals, and above these a long line of small arcaded windows gives a horizontal train to the lines of the building, and binds the whole together. The line of the front is broken rather happily by two small semi-circular projections, which, developing from large wall shafts in the basement, culminate in circular turrets when they rise above the roof-line. Some finish of the kind seems wanting to the massive corbelled-out blocks at the eastern angle of the front, which are cut square off at the top as if the architect, having carried them up so far, had been at a loss what to do with them. The tower and the upper portion of the building generally repeat the now rather too familiar characteristics of Scottish castellated architecture, in a tolerably effective manner. The mouldings and other details are rather coarse in scale and profile, which is no doubt to some extent due to the intractable nature of the material used. Of course the criticism may be made that a style of detail should be employed to which granite more thoroughly lends itself, and in some others of the new buildings this has been very conscientiously done, better than in the Town House; which is nevertheless a fine building and merits the local appreciation which it receives. The small tower seen on the right of the view, and a little way back from the line of frontage, is the old Tolbooth tower, before referred to as incorporated in the modern building.

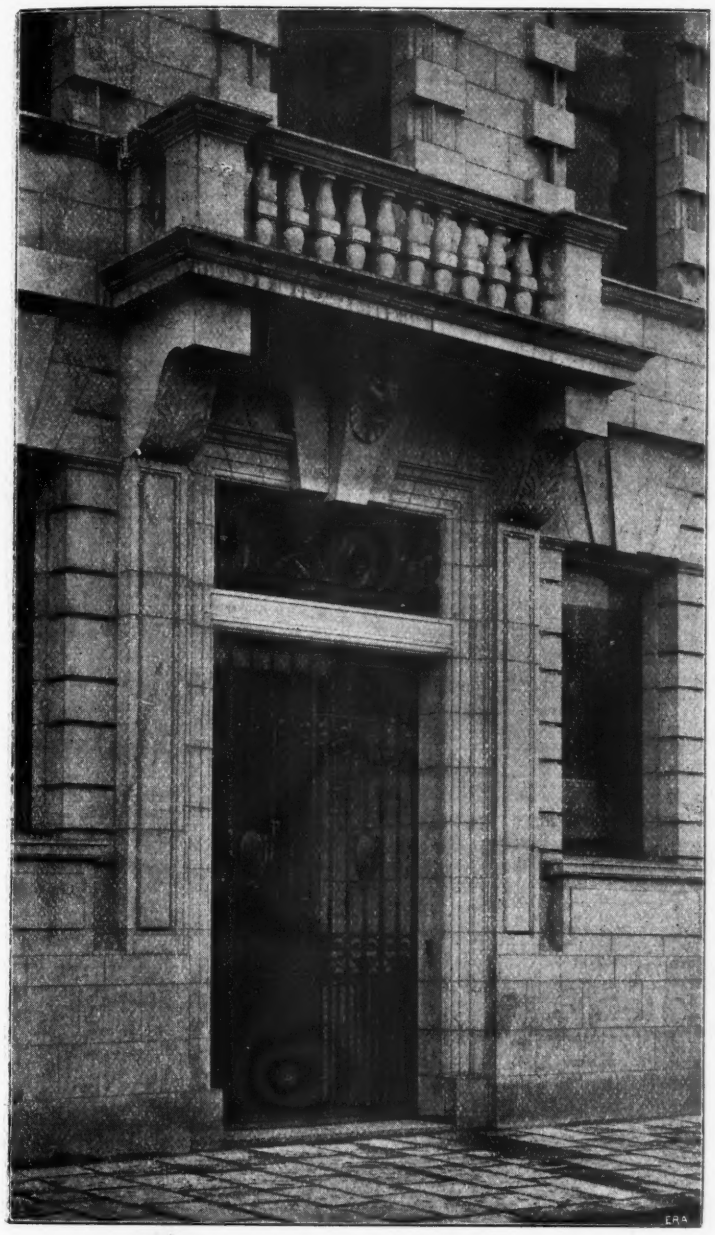
Union-street, running nearly east and west, is the principal street in Aberdeen, the backbone of the town, and a very important factor in the general character of modern Aberdeen, as it forms a bridge crossing the valley in which the railway now runs, and connecting by a level roadway the central and older portion of the town with the western extension; Aberdeen following the usual rule with modern cities of extending its residential portion mainly in a westerly direction. Union-street, like Holborn-viaduct, is therefore for part of its progress a high-level street bridging over the older streets on the declivity and in the valley, and is carried over the railway and the narrow portion of the valley by a boldly-designed bridge in one large arch. Part of the low ground at this point, adjoining the line of railway, is laid out as a public garden, skirted on the west side by Union-terrace, at right-angles with Union-street and carried on a kind of rampart of stone rising above the garden, from which it is reached by long flights of steps. As some of the best buildings of new Aberdeen are being raised along this terrace, it has a fine effect, with the gardens at its foot and the view of the older portion of the town beyond, and is the most picturesque portion of the city. Union-street itself produces a dignified effect as a whole, from its long straight line and the clean solid appearance of the granite fronts, though in reality it does not contain many buildings which are of much interest or effect when taken singly, and the habit of keeping the reveals of the windows shallow gives a flat character to the buildings lining the street, only relieved here and there by the more powerful details of some of the principal buildings. Next above the Town House, on the same side, the *Free Press* Office



Part of Frieze, Market Cross (see last page).



Commercial Bank. (S. Mitchell & Wilson.)



Doorway of Savings Bank, Union-terrace. (Mr. Kelly.)

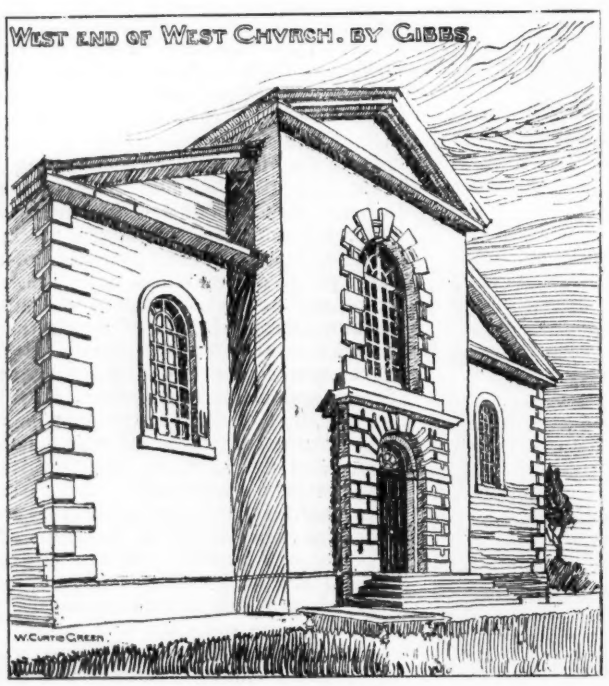
The Gordon College.

building, by Messrs. Ellis & Wilson, shows a certain degree of originality and finish in detail; the cornice in particular is not an imitation of any form of classic cornice; its main portion is of segmental or elliptical section decorated with circular rosettes and a triglyph-like feature alternating. The only objection to the design is, perhaps, that the detail reminds one a little too much of cabinet-making on a large scale. The new block of shops and offices next to it, by Mr. Wilson, shows a sturdy granite treatment, with mullions and transoms of absolutely plain square section; the cornice is a little coarse in detail (again the result of the limitations of the material). The line of the piers between the shops on the ground floor is carried up by chamfered buttress-like projections with the cornice above breaking round them; the effect would have been better if the ground floor piers had been wider and heavier. The boldest portion of the building is in fact the back elevation, looking on some inferior streets, which is treated in three great arched bays rising the whole height of the structure, with narrow granite piers, the intervening spaces filled in with glass and iron. The Town and County Bank, a little higher up, is a medley; the middle portion treated very academically with a large pilaster order running through two stories, while the circular-headed windows in the wings seem to belong to another class of design, and the decorative detail is of a very conventional type. On the other side of the street, a little higher up, the granite front of the North British Insurance Office shows a very plain and much less pretentious treatment—a rusticated arcaded ground floor with an order of very plain pilasters of little projection above; it has the merit however of complete unity of design, and of introducing no detail unsuitable for the material employed. Nearly opposite, the Commercial Bank of Scotland (see sketch) breaks the routine of classic or "plain wall" fronts by a narrow façade in a variety of late Gothic, carried out in granite of two tints, reddish for the main face and grey for the dressings; it is a pretty bit of work but hardly suggests a bank, and moreover looks curiously out of place amid its surroundings. The architects are Messrs. Mitchell & Wilson, of Edinburgh.

Proceeding further westward along Union-street, we come to one of the most characteristic bits of Aberdeen architecture, the columned screen which forms the street boundary of the principal churchyard, that of the "East and West Churches." This is a very good piece of classic work of its type, designed by the late John Smith, an Aberdeen architect of considerable note in the earlier part of the century. One of our lithographs shows a part of the screen as seen from the inside of the churchyard, grouped with a large Doric tomb by the same architect, and a portion of the very solid-looking angle building immediately westward of the churchyard. The whole group gives a good idea of the severe style of Classic architecture in vogue in Aberdeen at the time Union-street was made, and to which granite lends itself so well. The screen has a large gateway in the centre, the colonnade being repeated symmetrically on each side; the massive gilt iron grille is a good specimen of cast iron design of its date. The "East and West Churches," as they are called, form architecturally one building standing due east and west and therefore at a slightly oblique angle with the Union-street screen, which is rather an advantage to the general effect, as it separates the building from the classic scheme of the screen and the street architecture, with which it has nothing in common. The building has the appearance of a very large parish church with a central tower and spire, and in fact stands on the site of a great mediæval church, of which the nave, dating from the eleventh century, is said to have occupied the site of the present west church, and the choir, not built till the fifteenth century, that of the present east church; a very unusual instance, if this history is correct, of the nave of a mediæval church being built before the choir. At present, the west church is an eighteenth-century erection by Gibbs (who, it may be remembered, was a native of Aberdeen), on the site of the ancient nave, while the transept and the east church form a piece of cast-iron modern Gothic built after the old choir was pulled down early in the present century. We give a sketch of the west end of Gibbs's church (p. 458). The central spire, built about five and twenty years ago from the design of Messrs. W. & J. Smith, is a rather effective one, though the two horizontal bands of moulding and corbels round it are rather too strongly pronounced. Beneath the new east church there still exists the ancient crypt, now called St. Mary's Chapel, which includes the only mediæval vault now existing in Aberdeen. This we did not see; as usual in Scotland, the places of worship are all religiously (or irreligiously?) locked up during the week, and whatever there may be worth seeing in their interiors is not to be discovered without a greater expenditure of time than it is possible to give in making a comprehensive survey of a town.

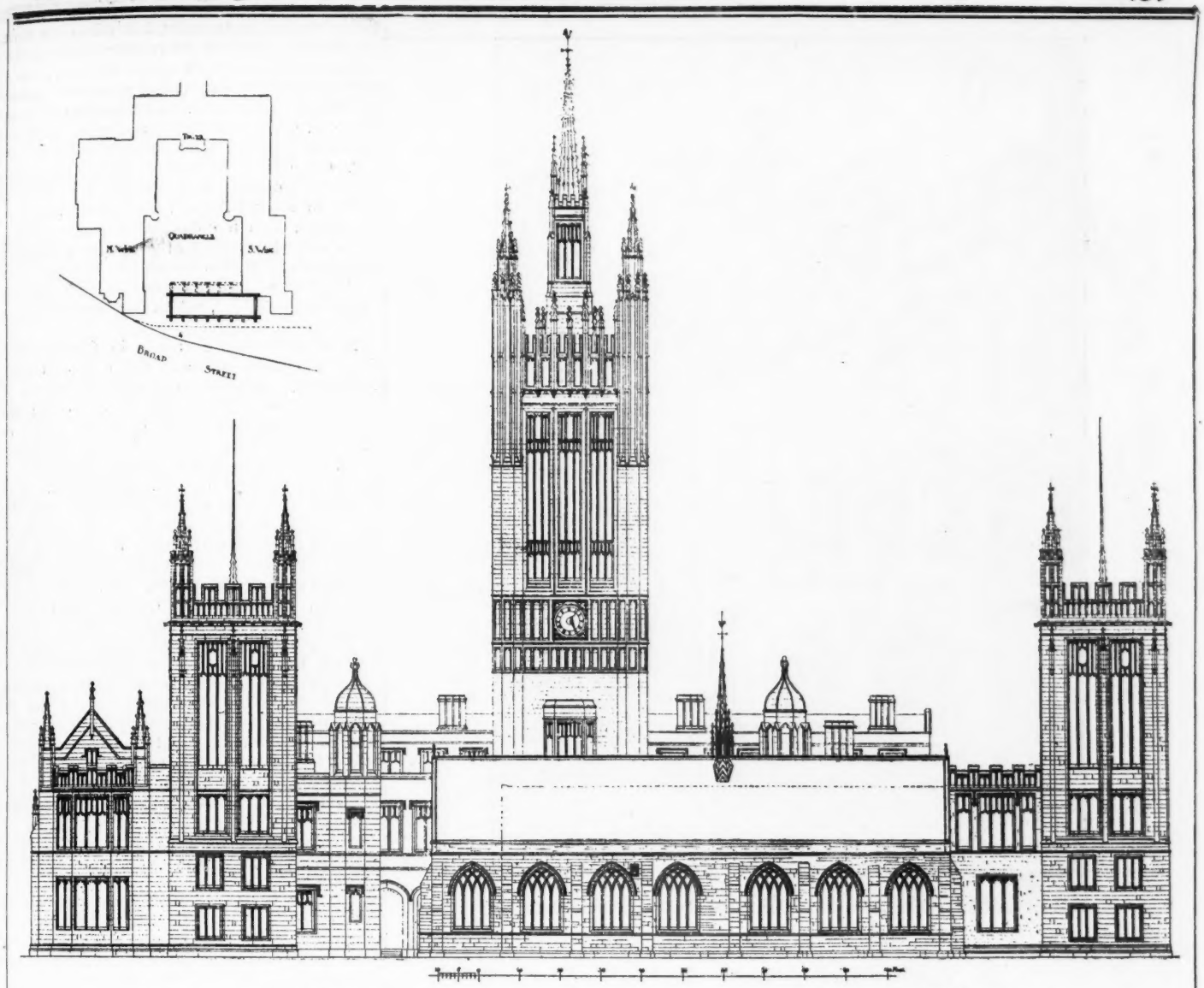
Before going further up Union-street we may diverge for a moment to Union-terrace,

Free Public Library (Messrs. Brown & Watt.)



the site of a row of some of the best modern buildings in the city, which are shown in three views on one of our lithograph sheets. At the angle with Union-street is the very refined and well-considered building for the Northern Assurance Company (Mr. Mackenzie), giving another example of the quadrant portico at the angle which seems rather a favourite incident in Aberdeen; the design suits very well the clean surface and clear-cut lines of the granite; the ground and upper story are well contrasted in character. It may certainly be urged that the coupled columns carry nothing but a console setting back to the wall line; but it cannot be denied that they look very pleasant to the eye. Passing the

Bon Accord Free Church.

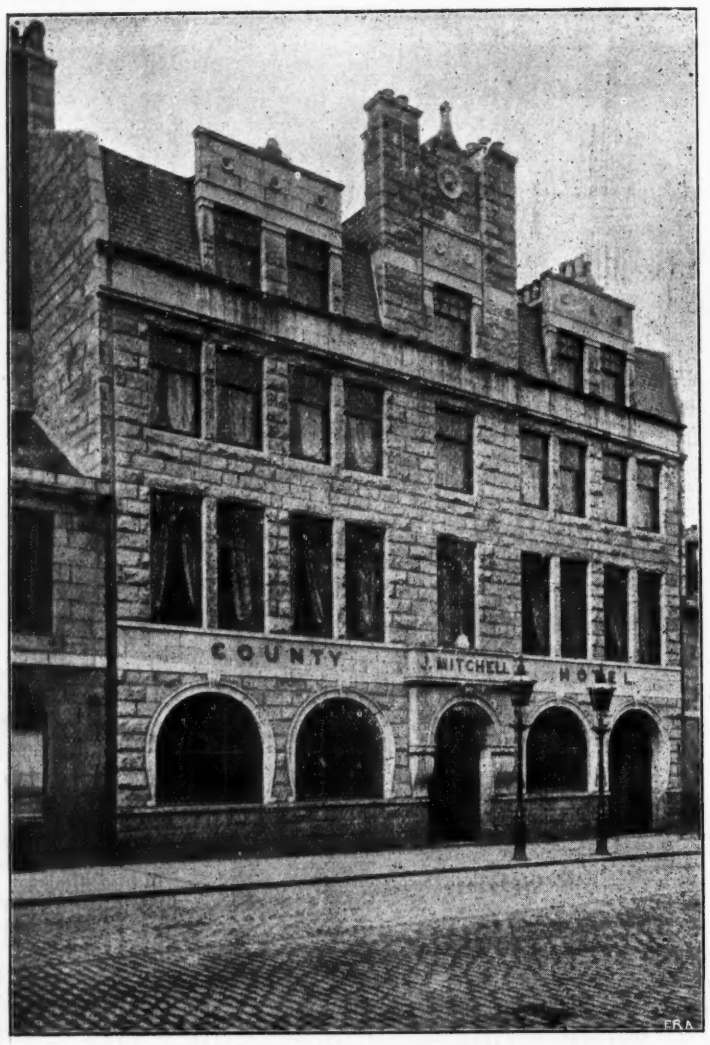


Elevation of Marischal College as Proposed to be Modified in order to Preserve Greyfriars Church (See Page 460).

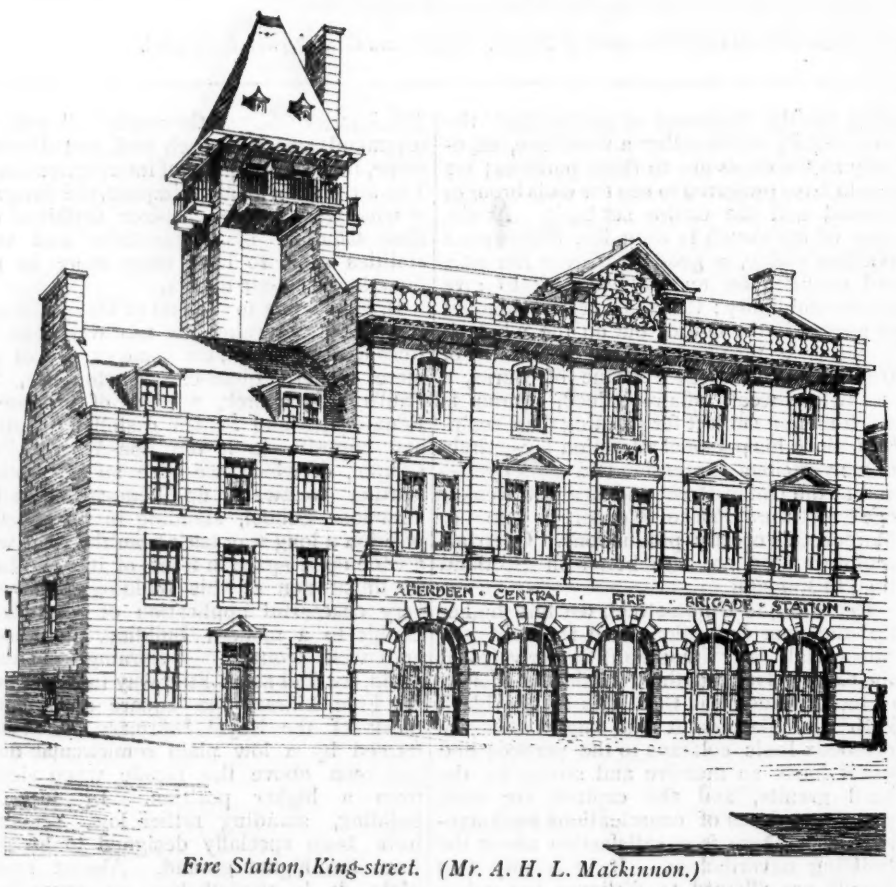
front of the Grand Hotel (Mr. Mackenzie) which has at least the merit of avoiding the commonplace ornament generally considered proper to hotels, we come on three new buildings in a row; the Savings Bank (Mr. Kelly), the Parish Council Offices and the School Board Offices (Mr. Mackenzie), the two latter still unfinished internally. The Council Offices, the centre of the three, is a striking design, as will be seen from the lithograph, with its bold rustication for two stories, the lofty doorway, and the graceful columnar order in the upper story; only the effect of the window sill course carried *square* round the circular columns is a little awkward. The treatment of the School Board offices can be sufficiently seen from the illustration; it is original, with its classic buttresses (as they may be called) going up between the pedimented windows, though the cornices round these projections, the upper member only of which is connected with the rest of the design, seem rather a gratuitous assumption. Of the first of the three buildings, the Savings Bank, we give a separate illustration; though very simple, it is an admirable specimen of a front designed for granite, especially in the bold and effective rustication of the first floor windows. We give also an illustration (p. 457) of the entrance doorway. Then if we proceed to the end of Union-terrace we find ourselves opposite two buildings grouped together and forming an effective contrast; the Free Library (Messrs. Brown & Watt) and the Free South Church, a view of which is given on the same sheet with the Union-street screen. The lower portion seems rather bald, but the dome is very graceful in design. It does not, however, show as an internal feature in the church, which is to be regretted. The Free Library (see cut) is a suitable-looking building with refined details and a good general effect, but the treatment of setting back the ends slightly seems rather a weak one, especially as the doors are in those portions; we should have preferred to see the ends brought forward and the centre set back. At the right of the sketch is seen Mr. Stevenson's Wallace statue, a good deal over life size, and mounted on an artificial rock to give greater sublimity; there is a certain amount of energy in the figure, but on the whole it is rather a tawdry work. The centre of Union-terrace boasts a statue of Burns, a somewhat weak affair—indeed, Burns is much more a subject for painting than sculpture, since his personal attraction lay entirely in his vivacious expression and dark eyes—and at the Union-street end is a still weaker one of the Prince Consort; one of Marochetti's courtly productions. Open air sculpture does not fare better in Scotland than in England.

Returning to Union-street, we find higher up the massive colonnaded front of the Music Hall (see lithograph) formerly called the County Hall; nothing could be plainer or more academical than this square block with the pilasters at the angles and the orthodox Ionic columns to the portico; and yet it looks so massive and strong in the hard granite, and the capitals are such excellent pieces of conscientious workmanship, that there is a satisfaction about the building nevertheless. It is a pity that people are allowed to disfigure the colonnade (as shown in the illustration) by using the columns as supports for advertisement boards. Careful workmanship, we may observe, seems to be one characteristic of Aberdeen architecture, and here again we may trace the influence of the prevalent materials; if you have to work detail in granite, it takes so much working to do it at all that it is worth while to do it well. The interior lobby of the music hall, with its columned screen at each end, and elliptical dome, is a graceful piece of interior treatment. The architect was Mr. Simpson, the designer of what we called the cast-iron Gothic of the East Church; his sympathies and capabilities seem to have been more in the direction of classic design.

If, after going to the end of Union-terrace, instead of returning we turn westward up Rosemount Viaduct, we come on two of the more modern quasi-classic churches, St. Paul's U.P. church, a kind of mixture of Renaissance and Scotch castellated Gothic, and opposite to it the Bon-Accord Free Church, of which we give an illustration. Further westward, up Skene-street, is the Grammar School, standing in an effective position a long way back from the road, with a wide open space in front of it. We have no illustration of this building, which is a very successful application of castellated Gothic to a modern building, picturesque and well grouped. Returning eastward again, we find some little way in the rear of the Free Library the square solid classic block of the Royal Infirmary, its centre formed by a low plain semicircular dome just seen above the façade when viewed from a higher position. In fact the building, standing rather low, seems to have been specially designed to be seen from the higher ground. Almost sternly plain, it is nevertheless an exceedingly dignified and important-looking building. In its rear a large addition has been made by Mr. Saxon Snell (in collaboration with the City Architects—Messrs. W. & J. Smith) on the modern system of hospital planning; this portion of the building represents the utilitarian element, modestly shrouded behind the more dignified and impressive mass of the older building. Coming down



Coun'y Hotel, King-street. (Mr. Clyne.)



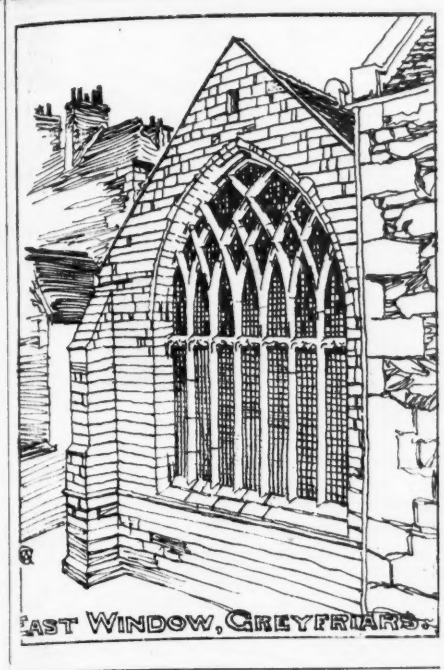
Fire Station, King-street. (Mr. A. H. L. Mackinnon.)

eastward again, we come on the long low façade of the Museum and Art School; the front being however a mere screen wall, as we see at the end the thickness of the wall without any return but an older wall which butts against it at right angles in a rather odd manner. The front (see lithograph) is plainly but suitably treated, the entrances to the Museum and Art School being marked, on each side of the centre, by an order of columns and a pediment which break the long low line of the façade. The central entrance with its elliptical arch gives access to the grounds of the Gordon College; the entrance is effe c tively treated externally, but when we turn round after entering the college grounds, the back of the *fronton*, in rough masonry, has a very unfortunate effect, as if it were designed for outside show only. The Gordon College (see cut, p. 457) standing at the back of its spacious grounds, is an interesting old building, the centre portion a piece of sober eighteenth century architecture by Adam (the father of Robert Adam), the return wings at the sides, with a colonnaded loggia, having been added subsequently by John Smith; good work enough in themselves, but quite out of keeping with the unpretending character of the centre block, which they seem to overweight.

Passing eastwards again in front of the Art Gallery, we arrive at the end of Upper Kirk-gate, one of the old narrow streets of the town, ascending which we come on the finest modern piece of architecture in Aberdeen, and one of the finest in the kingdom, the Marischal College as in process of being remodelled by Mr. Mackenzie. The Marischal College originally was a building in a weak Late Gothic style, occupying three sides of a quadrangle, with a tower in the centre of one side and a ground floor arcade on each side of the tower. Mr. Mackenzie's scheme, as far as the quadrangle is concerned, has been to entirely remodel the upper portion of the central tower, and to extend the two wings forward to Broad-street, setting them back somewhat from the line of the old part of the wings, so as to keep them wider apart, and planting at the end of each a subordinate but still a large tower in the same style of treatment as the new central tower, and forming a kind of echo to it on a smaller scale. The centre tower, and the left hand extension of the quadrangle with its tower, have now been completed. On one of the lithographs we show a reproduction of a photograph of the upper portion of the central tower as completed; unfortunately the photograph was not a very sharply defined one, and the illustration does not convey fully the brilliant sparkle of the tower as seen on a clear day, with the detail all in bright new granite, but it shows what a fine composition it is. The effect, seen in combination with the lesser tower in front of the return wing, is really splendid, and when the whole scheme is completed it will be one of the finest and most striking architectural conceptions to be seen within the compass of the British Islands. At present, however, the completion of the design in its original form is under debate. The old Grey-friars church stands, unsymmetrically, across the opening of the quadrangle, and the tower on the southern wing cannot be built without removing the church. We presume that when the design was made it was assumed that the church would be removed; now there seems to be a great desire (in which we understand the architect shares) to preserve it. Mr. Mackenzie's elevation, which we reproduce (p. 459), shows how he proposes to solve the difficulty, by breaking the symmetry of the composition and planting the remaining tower further to the right, so as to avoid the church, the side of which is shown in the elevation.* This alteration will unquestionably spoil the effect of the scheme, and the church will in any case shut out a general view of the quadrangle, and stands awkwardly in front of it, not being central with anything. The interior of the church has no interest of any kind but in its historical associations; it has been entirely "churchwardened." The exterior retains its mediæval face for the most part, it is not of the highest value in that sense; we give a sketch of one end of it. Whatever may be one's reluctance to interfere with ancient buildings, it appears at least a question whether the church is of so great value that its retention should be allowed to spoil so fine a conception as the new Marischal College design.

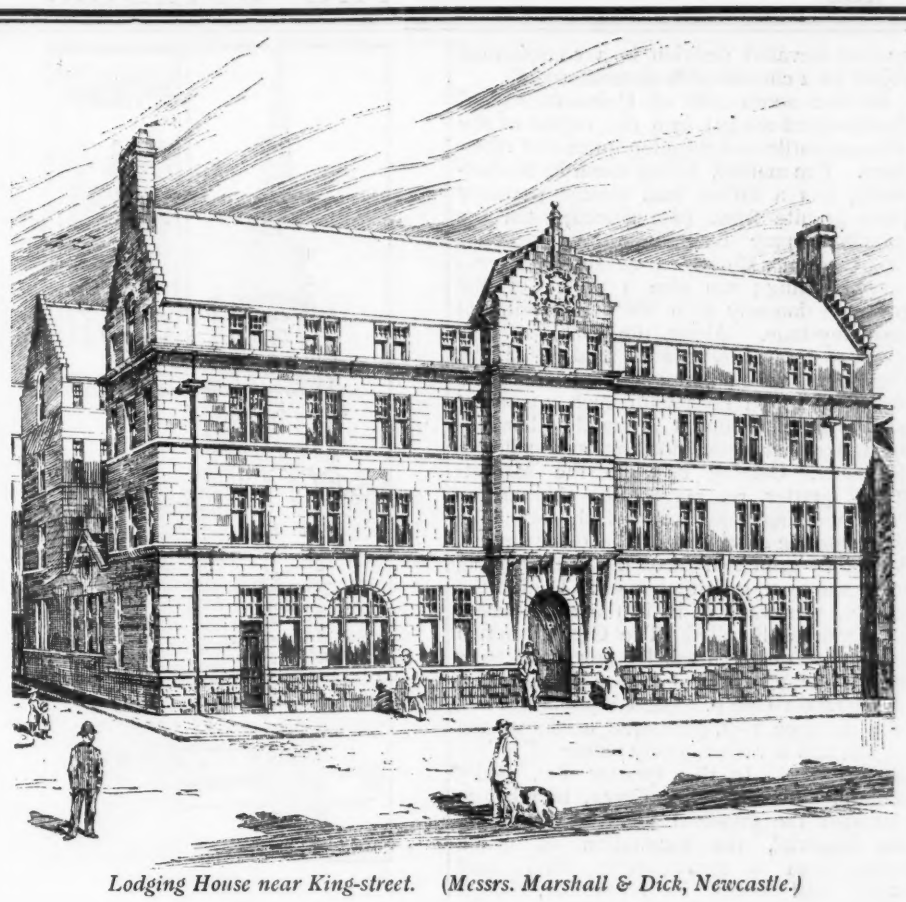
But we have not done with the Marischal

* The small plan in the corner of this elevation will also be useful in explaining the whole scheme.

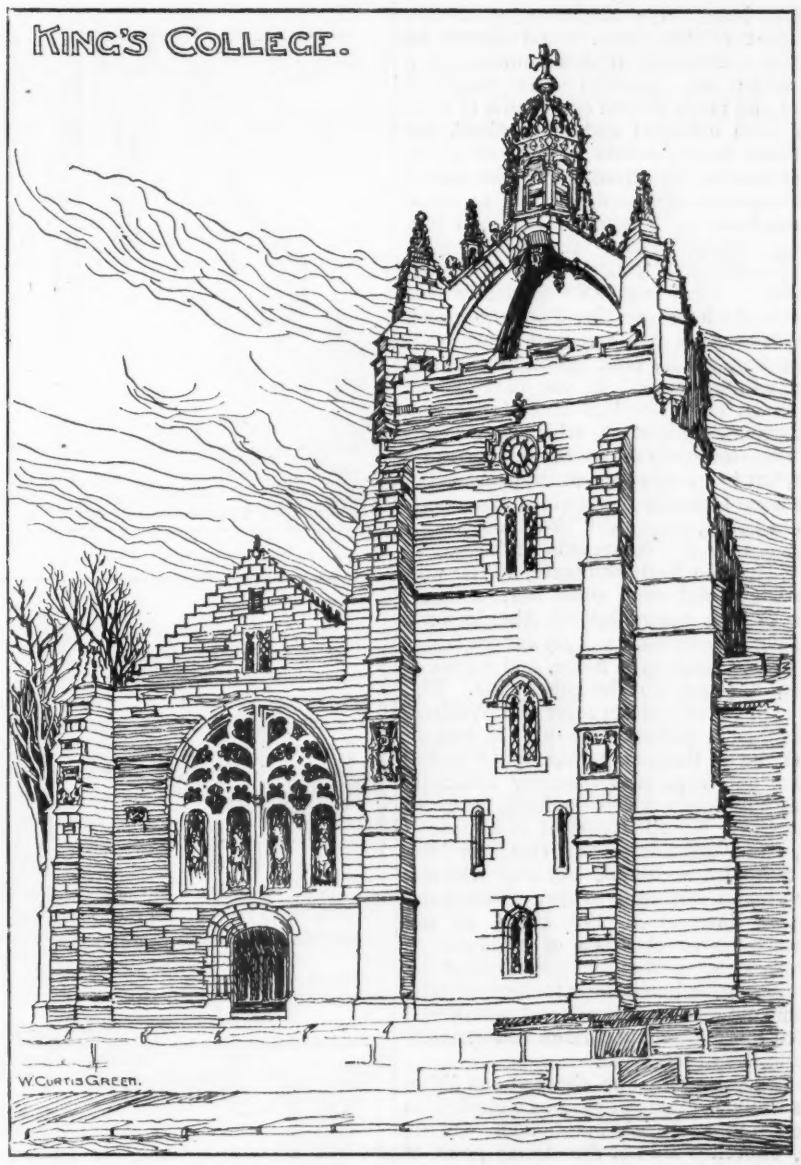


College yet, for at the back, facing towards West North-street, is the great mass of building, the Mitchell Hall, added on behind the tower and at right angles to the central block. The lithograph from Mr. Mackenzie's sketch shows the general appearance of this building, with the central tower rising at the back of it. As the ground falls low in West North-street, this lofty and very solid mass of building, with its admirably designed and proportioned angle turrets, and the lofty buttresses and masses of plain wall at the sides, relieved by the row of traceried windows at the top, is seen with all the more effect, and is perhaps in itself the best portion of the new work, only the *coup d'œil* is not so effective as in front, where we see the two towers in combination.

As we are now near the neighbourhood of Castle-street again, we may go back there and take a new line up King-street, due north. At the commencement of King-street, on the west side, is a rather remarkable range of the old classical granite architecture of Aberdeen, a view of which is given in one of the lithographs. Starting from the Union Bank at the angle, before mentioned, we have the Surgeons Hall, a severe classic building with a colonnade and pediment, some granite fronted houses, and the large and massive North Church with its square tower and circular Greek-looking lantern; the whole range by the late John Smith before referred to, the designer of the Union-street Screen. Although the details are cold and uninteresting, the whole mass of buildings has an impressive appearance, and the façade of the North Church, as seen from the end of West North-street, is a fine and striking design in an old-fashioned taste. Further along the road Mr. Clyne's County Hotel is a good specimen of simple and characteristic treatment of a granite front. In the neighbourhood of King-street also are to be found the new Fire Brigade Station (Mr. Mackinnon) and a block of lodging houses by Messrs. Marshall & Dick, of Newcastle, a very good specimen of simple treatment of a building of this class: of both these we give illustrations. King-street brings us eventually to King's College, properly belonging to Old Aberdeen, but the chapel of which, with its thickset boldly designed tower and "crown" roof, is the best piece of mediæval work in Aberdeen. We give a sketch of the tower and west end of the chapel, the interior of which is chiefly remarkable for the splendid carved woodwork over the stalls, of the date of about 1500 (1505 is the precise assigned date), in open-work panels between mimic buttresses, every panel of different design. We give a sketch also of the lead flêche and the head of one of the buttresses (p. 462), with its sundial



Lodging House near King-street. (Messrs. Marshall & Dick, Newcastle.)

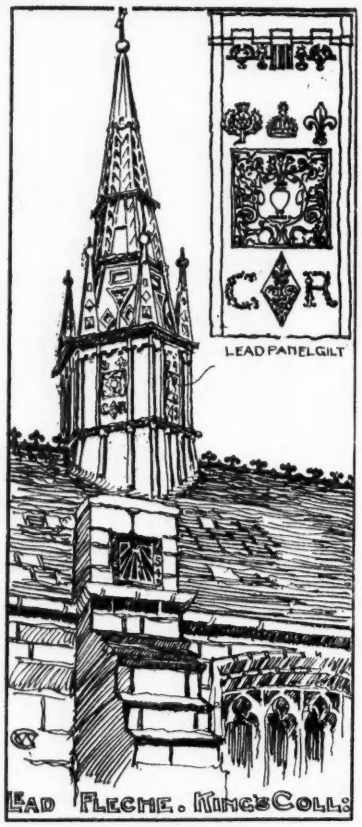


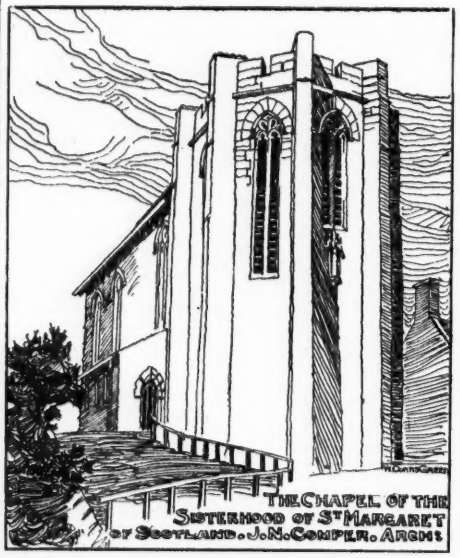
The decoration of the chapel, carried out a few years ago by Dr. Rowand Anderson, is a little too much of the stencilled pattern order, and hardly seems in keeping with the ancient work. On the way back, a little west of King-street, we may see on an eminence the exceedingly characteristic octagonal chapel of the sisterhood of St. Margaret (see p. 462), looking at a distance much more like a piece of mediæval than modern work, and which

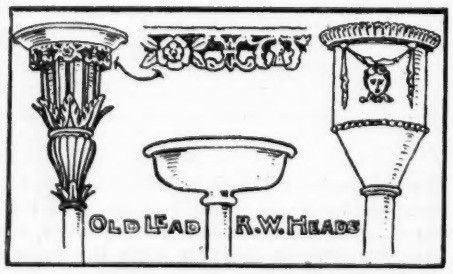
from its elevated position is a conspicuous object for a considerable distance round.

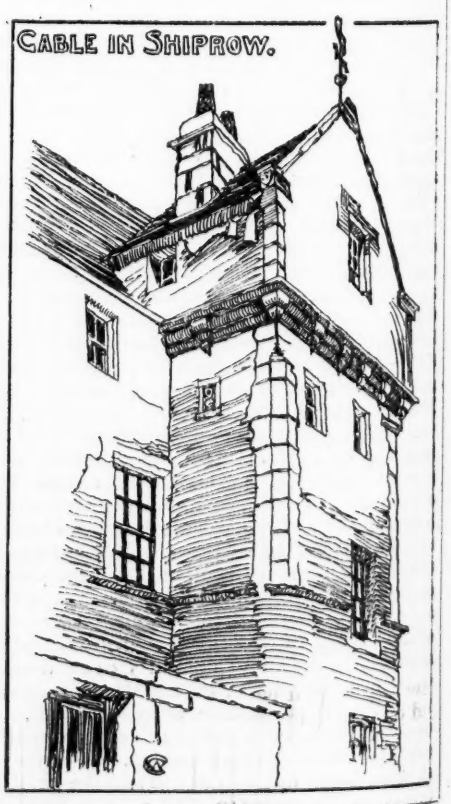
On the south side of Union-street and Castle-street we get into the region of the old mercantile and shipping quarter of Aberdeen. The market, facing towards Market-street, has a rather bold though perfectly plain granite front (see sketch). On the principal quay bounding the docks is the Custom House, a seventeenth century building; we give a sketch of the entrance doorway with its plain pediment and keystone. Along the Dee, to the south of the Docks, runs the road called The Esplanade, which however has none of the character which goes with such a name at a watering-place, but it is merely a banked-up and rather dreary-looking road skirting the river. Coming back to the Market-street quarter, we may notice the narrow steep winding lane called Ship-row as a characteristic specimen of the older streets, flanked by grim and dirty but solid-looking small stone or granite houses. Behind the market, westward of it, is the stone-paved open space still called "The Green," though every trace of green has long ago fled from it; but in the middle of it is a very curious old fountain (see p. 463), a square erection with an ogee roof, grotesque masks at the angles, and a rather pretty statue of a boy on the top. In this quarter too, oddly enough, and near The Green, is what is reckoned the principal hotel in Aberdeen, the Imperial, the foundation of which dates from a good while back, and which still keeps its reputation, though a more unpromising position for a first-class hotel, in a narrow street in the lower part of the town, could hardly be imagined. Probably it was founded at a time when the position was reckoned a better and more central one than it is now. It has been enlarged and modernised, but the modern front presents nothing of architectural interest or attraction. The oldest street houses in the town, or some of them, are to be found in the long, narrow, and evil-smelling street called the Gallowgate, running northwards from the end of Upper Kirk-gate. Here we can probably see examples of what were the dwelling-houses of Aberdeen some two hundred years ago; low but very solidly built granite walls with square windows; and in one part of the street is an old Jacobean arched gateway with rusticated pilasters, which now leads into a deserted open space at the back of a church, but has very much the appearance of having been formerly a gate into the court-yard of a house, somewhat like those which give access to the courtyards of houses in Paris. Then, in Netherkirkgate, a little way to the south, and amid some narrow lanes, is one of the curiosities of Aberdeen; a small round tower with a flatly carved figure of an armed man in a niche, and a coat of arms in a panel on the other side. The statue is of course said to represent Wallace, though this is rather doubtful. It was in Netherkirkgate that one of the old "ports" or town gateways was formerly situated; possibly this tower was a flanking tower to the gateway. At all events it is a curious object, rather difficult to find (we stumbled on it quite by accident), but one which a visitor should not omit to see. Among the objects of interest in the shape of old remains we give sketches of a house in Ship-row, an interesting old house called the Victoria Lodging-house, near the Gallowgate, and some old lead spoutheads and ornaments, of which there are some curious and interesting examples in the town.

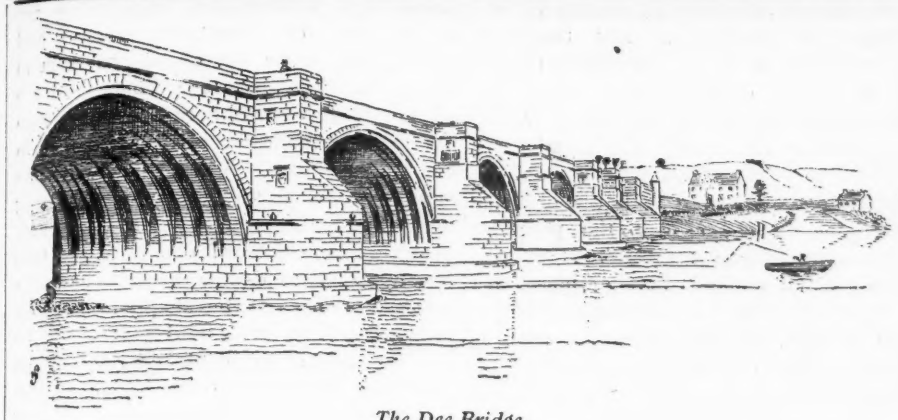
We have devoted one sheet of our lithographs to illustrations of various churches, in addition to those already mentioned. On the whole, churches are not the strong point of Aberdeen architecture. All those represented on the lithograph are modern and comparatively new ones, except the Free High Church, which is in fact two churches, the portion shown in the foreground of the view being the Free High Church, the portion on the further side of the tower











The Dee Bridge.

the Free East Church. The interesting feature in the building is the brick spire (we believe by A. Simpson); not only because tower and spire, in spite of bad detail, are very pleasing in general line and proportion, but because the spire is such a capital piece of brickwork; again illustrating what we have observed as to the meritorious tendency to good and sound workmanship noticeable in Aberdeen. The most ambitious of the new churches is the Queen's Cross Free Church, a West-end church, of which we regret that we had not a larger photograph, for though all the detail is not what we should admire, it is a really very spirited attempt at originality in the ornate treatment of a granite building, and has an exceedingly powerful appearance, with its battering ground story to the tower, the strong accentuation of the angles, and the heavy corbelled-out balcony above. It must be admitted that the details do not hang together very well; the short thick columns with rather French Gothic capitals on either side of the west entrance are coarse in appearance and seem to belong to another building, and it was a great mistake to mount the upper part of the spire on small columns with no other connexion with the substructure; the result is that when seen against the sunlight the upper portion looks quite cut off from the rest. Close to it (not illustrated) is an elaborate stone church of rather French Gothic detail, somewhat too exuberant, but the tower has a good outline and groups well with the rest. There seems a tendency in Aberdeen to make church towers somewhat too lean and thin in proportion, a fault which is apparent both in the Holburn Free Church and the Carden-place U.P. Church, and it will be the same with the St. James's Episcopal Church at the top of Union-street, if the tower ever gets finished. The church of St. Peter's, by Messrs. Kinross & Tarbolton, of which a small illustration is given, is in some respects one of the best of the modern churches, since it shows true feeling for Gothic work; it is not yet completed. It is built of granite with freestone dressings and tracery. In general, it must be said that Gothic churches in Aberdeen are not very good; the local feeling seems to be more in sympathy with classic forms. There is a large church of what we should call the Rickman date of revived Gothic on the south side of Union-street, and up Hunter-street (out of Union-street) is the Roman Catholic Cathedral church, a very poor affair, with weak florid detail and a thin and starved tower and spire.

The best residences of the town are in Albyn-place and Queen's-road; wide roads, of which the latter runs to the extreme west of the city, and indeed at the western end of Queen's-road the houses are still in course of construction. It is only here, among the new houses, that we find a little of character and originality in the residential architecture; the older houses in this quarter are what are called comfortable residences, no doubt, but show little interest or character in architectural treatment.

Aberdeen can boast of two great advantages in her surroundings; a fine sea beach, extending from the docks to the mouth of the Don, and a most beautiful wide rapid river in the Dee, above the tidal portion. On the beach is a bathing station, where also a very large salt-water swimming bath is now in course of construction. The Dee is easily reached by the tramway to Dee Bridge, which is in itself a beautiful bridge, and may reckon among the architectural attractions of the neighbourhood (see sketch). The arches are formed with nine chamfered ribs or groins with the wall face deeply recessed between them, giving a fine and powerful effect of light and shade. The bridge dates from the sixteenth century, but it has been very largely refaced and restored, and in 1842 was widened; so that it has not the interest of an untouched structure. The original design, however, seems to have been in no way interfered with, and it is still a very fine and picturesque structure, which has not lost under modern repairs all the appearance of antiquity.

We may sum up with the conclusion, for which we think we have shown evidence to carry our readers with us, that Aberdeen is a town possessed of a great deal of architectural interest and vitality. If it cannot be compared with some of our largest cities, it may be pretty safely said that there is no town in the kingdom of the same size in which so many fine buildings can be found.*

SOUTHEND-ON-SEA COMPETITION. — Mr. F. T. Baggallay writes that the design marked U, which was attributed to Mr. Mountford in the review of this competition in our last issue, appears from the description to be his design. Mr. Mountford, we have since ascertained, was not a competitor.

* This series of illustrated articles was begun in our issue of September 26, 1896. A list of those towns already dealt with, and particulars of future arrangements, will be found on page i.

NOTES.

Westminster Bridge and the Tramways.

WE think it is to be regretted that the House of Commons last week threw out the Bill of the London County Council for the construction of a tramway over Westminster Bridge and along the Embankment to Blackfriars. We cannot doubt that such a tramway would be a great public convenience. Westminster Bridge and the Embankment are so broad that a tramway would be less inconvenient to vehicular traffic than in narrower streets. The objection that a tramway would disfigure the Embankment is absurd; it would be as reasonable to object to covered vans and costermongers' carts. The Bill was in truth thrown out partly by those who would keep the streets of London for those who ride in carriages and cabs, and partly by those who have an old-fashioned prejudice against tramways in streets. We quite admit that tramcars so large or so alarming to horses as some of those to be seen on the continent should not be allowed. This was a matter which could have been settled in committee, and did not justify the throwing out of the Bill on its second reading.

The Manchester Sewer Case.

THE arbitrator's award in the case of the Corporation of Manchester *v.* Perkins, Graham & Co., to which we referred briefly in a Note in our issue of April 16 (page 367), is a judgment in favour of the plaintiffs as far as the main point is concerned, that of making the contractors responsible for the cost incurred in doing a great part of the work over again. The contractors are specifically exonerated from any charge of fraud except in so far as they were technically liable for the dishonest conduct of their workmen; but Mr. Perkins, the head of the firm, who had the work in hand, does not escape the charge of negligence in not finding out and preventing the scamping of the work by the workmen. It appeared to us that some of the evidence suggested something more than negligence, and that the judgment is rather more favourable to Mr. Perkins than might have been expected from the evidence. What are we to make of this statement of the bricklayer Dean?—

"Did he [Mr. Perkins] not say that he had looked after you for a long time, and that you ought to look after him a bit?—Yes; but that was referring to some bad blue bricks that I was told to get up early in the morning to use.

Those were bricks that had been condemned, were they not?—Yes.

And did you get up early and use them?—Yes.

Did you not say also that the fallsman at the top of the shaft gave you a signal when the inspector was coming?—Yes, so that in a short time we could run up a course of red brick round the blue for the inspector to see."

The latter answer does not inculpate the contractors, it only shows what a barefaced system of deceit was going on under their very noses. But the first question and answer amounts to a charge by the witness that his employer was in collusion with him, and it is rather strange that in Mr. Perkins's evidence some days afterwards no reference was made to this. It may be difficult to apportion the blame exactly between the contractors and their workmen, but it is evident there is a great deal to be shared between them, and that it has been a very discreditable affair.

Representations as to Sanitary State of Houses.

THE case of Burrell *v.* Brown, which was decided last week, will, we hope, be a warning to house owners against making reckless representations as to the sanitary state of houses. The plaintiff stated in evidence, and was supported by several witnesses, that the defendant was asked if the sanitary state of the house was good, and he said that it was. It proved to be quite the reverse, and judgment was therefore given against him. The result is that the defendant is now in a worse position than if he had either put the drains into a good condition before he sought for a tenant, or had frankly said that they required work done upon them. We fear that there always will be money-grabbing house owners who will endeavour to let their premises without putting them into proper order. We must point out, however, that the plaintiff in the present instance was in some senses fortunate; for, as we have over and over again said, every prudent purchaser or tenant will always have premises examined, and not trust to mere representations. An examination by a competent person is the only safe course.

The Charity Bazaar Monument, Paris.

M. GUIBERT, the architect commissioned to carry out the monumental building on the site of the dreadful fire in Paris last year, has commenced the work on the ground. The designs show a square form of plan, slightly recessed from the street line of Rue Goujon, with a façade of something over 60 ft. in width. The building will have a podium with doors at each side giving access to the living rooms, on the ground floor, of the Sisters who will have charge of the building. The main building will include a portico with an arched entrance flanked by columns, and approached by a flight of steps. Above will be a pediment with a commemorative shield or cartouche supported by allegorical figures; a cross surmounting the whole. The chapel itself will be circular, with porticos on each face and roofed with a dome crowned by a statue of Faith. In the interior a colonnade of eight columns will carry the base of the dome. To right and left will be two side chapels in which will be engraved the names of the victims of the catastrophe. In the rear of the building will be a garden surrounded by an arcaded cloister, with a vaulted crypt under it. The total cost will be about a million francs. The monument is all very well, but one cannot help reflecting that the expenditure of a comparatively small proportion of that sum on the original bazaar building would have been sufficient to render it secure from sudden conflagration, and thus to have avoided the catastrophe.

Glasgow International Exhibition Competition.

IF the terms of the competition for the building for the Glasgow International Exhibition are correctly stated in the advertisement of the Council of the Exhibition, which appears in our advertising columns this week, we think they will have to revise it if they want any architects of standing to compete. The premiums offered are liberal enough, and it is stated that the architect whose design is placed first in order of merit by the Executive Council will be employed to carry out the building "unless some obstacle (of which the Executive Council shall be sole judge) prevents such employment." This we take to be only a safe-guarding clause for exceptional circumstances. But the next announcement is that the architect chosen will be paid a commission of three per cent. on the cost of the building, "which commission shall include the premium to which he may be entitled." As we have often pointed out, even with the ordinary commission of 5 per cent. the premium ought never to be merged in the commission, as it generally barely remunerates a competing architect for making the competition design; but here three per cent. is offered as the commission. The "3" is given as a numeral and not as a word, and therefore it is just possible it may be a mistake for "5;" but if not, it is no use the Council expecting that any architect of good standing will compete, and they had better alter it at once. Nothing is said of an assessor; possibly in this case the Executive Council includes artists and architects; in that case there is no need for a professional assessor; but that point also needs explanation, as well as the "3 per cent."

Architects Touting for Commissions.

THE Hon. Secretary of the Leicester Society of Architects sends us the following circular-letter, which had been received by a solicitor practising in Leicester, and forwarded by him to the Leicester Society of Architects:—

"*Re* ESTATES, ECCLESIASTICAL, PUBLIC, OR RESIDENTIAL BUILDINGS, WAREHOUSE AND BUSINESS PREMISES, VILLAS, FARM BUILDINGS, &c.

SIR,—Believing that you have at times, either directly or within your influence, work requiring the services of an architect and surveyor, I should esteem it a favour if you would afford me, when the opportunity occurs, a preliminary consultation thereon.

From my experience of over thirty years in all branches of the profession, and from my having carried out most varied and important works (see annexed list), I am able to guarantee that all building, surveying, or other work entrusted to my care, shall be carried out with close personal attention to all details, at a minimum of cost, with sound work, and avoidance of extras; and in all cases with the best design."

We will not assist the writer's advertisement by giving his name, but he dates from an address in London. This seems about as gross a case as we have ever come across. To add the last touch to it there is the following postscript:—

"P.S.—For introduction of business I shall be happy to pay 20 per cent. of my commission as soon as received."

Electric Light Fuses.

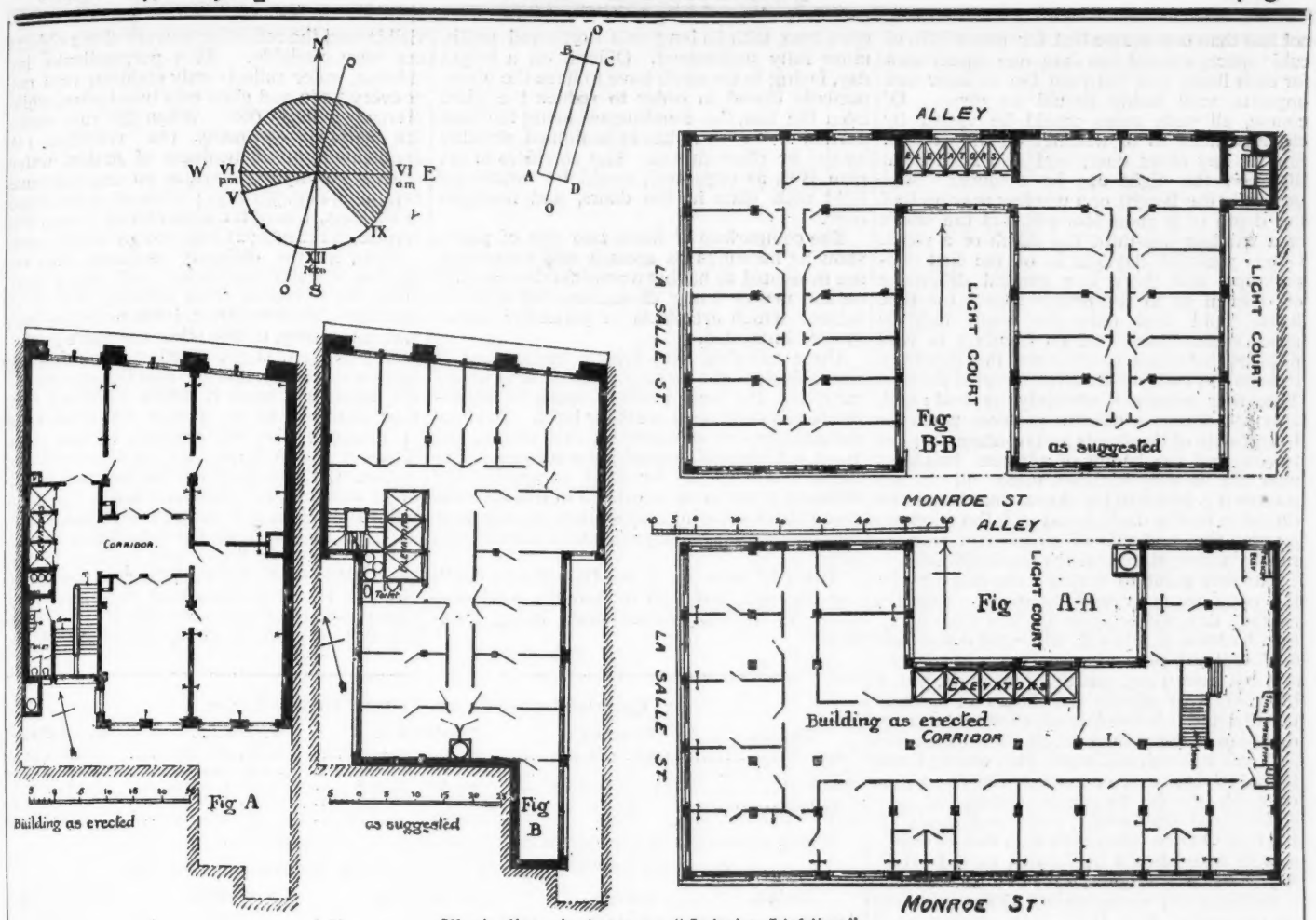
THE paper read by Mr. Andrews to the Institution of Electrical Engineers on the 5th inst. dealt with "The Prevention of Interruptions to Electricity Supply." There were many excellent things in this paper which will be appreciated by electricians. We may mention a highly ingenious magnetic cut-out, designed by the author, which can tell whether an alternator is running as a motor or a generator, and in the former case promptly cuts it out of the circuit. This device ought to prove useful wherever alternators are being run in parallel, as it is preferable to the ordinary fuse. His method also of arranging a duplicate set of mains to sub-stations and putting his magnetic cut-outs in the circuits reduces the danger to be apprehended from burst water pipes, gas explosions, pick-holes, &c., to a minimum. Mr. Andrews, who is engineer to the Hastings Company, has found that underground substations are a source of constant worry and anxiety, and so he has abandoned them in favour of those above ground. We are sorry to differ entirely from Mr. Andrews on the question of the size of the main fuse in consumers' houses. As we pointed out some months ago, when the question of increasing the size of the main fuses was first seriously discussed by electrical engineers, the true remedy is not to double their size and thus increase the fire risk, but simply to insist on proper clip fuses being used. It would be well if central station engineers remembered that their clients are easily frightened, and that they are not accustomed to the smell of hot insulating material or getting burns from the over-heating of their metal switches.

Mr. Mark Fisher's Exhibition.

IT is a pleasure to study a small group of pictures by a landscape-painter who really has a style, which is what can be said of Mr. Mark Fisher more decisively than perhaps of any other English landscape-painter of the day. His work is somewhat restricted in range, but he has a system and a definite aim, and his art has a good deal of affinity with that of some of the best French landscape-artists of the day, in its broad method and absence of mere realism. Some of the pictures at present on view at 14, Brook-street exemplify Mr. Fisher's best qualities as a landscape-painter, and all have something in them worth attention and study. The three finest are perhaps the small one entitled "A Shady Spot" (2), a landscape and cattle scene; the large one under the title "The Farm Pond" (12), and the one next it under the title "Autumn" (10). In the two last named the main elements are the same—water seen in the foreground under the shade of trees through which broken lights glance, and a brightly lighted distance or middle distance beyond. In "Autumn" the ripple and coolness of the water are beautifully conveyed. In "The Farm Pond" cattle form an incident of the picture; and it is worth while to notice how Mr. Fisher treats cattle, conveying the form and character and colouring of the animals without separating them from the total effect of the composition. The bright effect of the sunlit bank beyond is also an admirable incident; but no incident interferes with the conception as a whole. The same with the ducks in the picture of "Autumn"; they are not (in the words of the Royal Academy regulations) "mere transcripts of the objects of Natural History;" their forms are sufficiently defined (for people who do not want to look at pictures with their eyes close to the canvas), but their essential object is to form lights in the shadowed portion of the picture, and to enhance the effect of the rippling blue water. Among others of the exhibits we may mention "Algiers from Mustapha Superior" (8), "A Breezy Day" (1), "Cows" (5), and "Summer Evening" (28), one of the larger works. The room is unfortunately too small to show paintings of this type to the best advantage; they require a certain space and distance; but the collection is well worth a visit. It will be open to the end of the present month.

The late Gustave Moreau.

THE terms of the will of the eminent painter Moreau are not yet published, but it is understood that he has left to the State his house in the Rue la Rochefoucault, with the



Illustrations to paper on "Interior Lighting."

collections which he had made there. In case of the State declining the legacy, it will go to the City of Paris; or, in default of their acceptance, to the Institute of France. It is also said that he has left 100,000 francs to the Académie des Beaux Arts for the foundation of a prize to be awarded every three years at the judgment of the Académie, for the best work of art produced during the three years. As an act of homage to the memory of the painter, an amateur, M. Charles Hayem, has presented to the Luxembourg three fine water-colours by Moreau, which form variations on three of his principal works, "L'Apparition d'Hérodiade," "Le Jeune Homme et La Mort," and "Ædipe et La Sphinx."

An Exhibition of Book-bindings.

A COLLECTION of modern examples of the art of book-binding is now on view at Messrs. Boussod's Galleries, 25, Bedford-street, Covent Garden. The examples number nearly 250, and include many specimens by Rivière, Cedric Chivers, Ramage, Bagguley, and Zaehnsdorf. Where the general standard is so high it is somewhat difficult to select examples for particular notice, but, perhaps, the work of Messrs. Rivière & Son is marked by more refinement than those of other exhibitors, and a volume of Kingsley's "Water Babies," in green morocco, with water-lilies inlaid in white, and "Rossetti's Poems" (4) are particularly good in this respect. Among others exhibited by Messrs. Ramage & Co. is a book of the Gospels in brown morocco, with white lilies inlaid, and three by Miss S. T. Prideaux—a Keats, Bridge's "Essay on Keats," and a book from the Kelmscott Press, the first two in blue morocco, the last in dark green. Mr. Bagguley exhibits several books with ornament by the "Sutherand pro cess," the general effect of which is hardly satisfactory. The same may be said of the books bound in vellum, made transparent, and painted by various artists, exhibited by Cedric Chivers. Miss MacColl exhibits some very beautiful work, Nos. 83, 84, and 85 being especially noticeable, and Messrs. Birdsall & Son, of Northampton, have a case of nearly twenty examples, of which Nos. 179 and 184 are perhaps the finest. A little book (197), "Shakespeare's England," is bound in remarkably rich-coloured Spanish morocco, with but little if any tooling. Sonnets by Rossetti (211), in olive morocco, with inlaid flower decoration, is worth notice for its refinements, as are Nos. 225 and 234, by Zaehnsdorf. The exhibition is one which all lovers of modern book-binding should see.

THE ARCHITECTURAL ASSOCIATION.

AN ordinary fortnightly meeting of this Association was held in the Meeting-room of the Royal Institute of British Architects, No. 9, Conduit-street, Regent-street, W., on Friday last week, Mr. Hampden W. Pratt, President, occupying the chair.

The minutes of the last meeting having been read and confirmed,

The following two gentlemen were elected members of the Association:—Messrs. A. A. Lermit and L. R. Stains.

The Chairman said that it was with much pleasure that he had to announce that the Royal Institute of British Architects, for the seventh time, had made a grant of 100*l.* towards the educational work of the Association. He desired to propose a very hearty vote of thanks to the Council of the Institute for the grant. The motion having been agreed to heartily,

The Chairman said that in connexion with the annual soirée, which had just been held at the Café Monico, and which had been such a great success, they were very much indebted to two gentlemen, Messrs. G. B. Carvill and F. D. Clapham, who between them had organised the entertainment. He moved a vote of thanks to them, and also to the other gentlemen who contributed to the enjoyment of the evening. This having been carried,

The Chairman read the nominations for the House List for the next session. The full list will be found in the *Builder* for April 30, page 412.

The following gentlemen having been appointed scrutineers:—Messrs. E. Greenop, T. C. Yates, W. A. Jeckells, C. H. Brodie, A. Smithers, and W. W. Biss,

The Chairman said that the Water-colour class had been again postponed in consequence of Mr. Weedon's illness. The date was now fixed for May 14.

Mr. W. Eckstein then read the following paper, entitled "Interior Lighting (Reflected Lights, &c.)":—

The treatment of light, or the proper distribution of daylight to any building, is of greater importance than anything else, except, perhaps, drainage, and daylight assists largely in the sanitary conditions and cleanliness of all buildings, whether offices or warehouses. It is a common saying that "dirt cannot stand light," and when it is borne in mind that daylight is available to all and costs nothing, it is a great pity not to utilise it to the utmost extent, and this should be done by covering any particular site so as to obtain the best result from the open air and direct daylight, and to assist the same by the use of artificial means or devices, such as reflectors, pavement lights, &c. Daylight necessarily is brought in through the windows, and the light that enters the room falls on the floor at an angle up to about 45 deg., where it is nearly all absorbed, and consequently does not produce the full effect that is required for all offices. The arrangement of windows, of course, lends itself to assist or detract from the result obtained, and it will be found well to keep the head of the window as near the level of the ceiling as possible; at any rate, not to be more than 12 in. below it. The part of a window is practically of little effect if brought within 2 ft. of the floor level. The window should be placed so as to give an equal margin of wall on either side as near as possible, and the length of an office should not exceed about twice the height of the head of the window from the floor, which in the ordinary way would be a limit of about 16 ft. to 20 ft. The general depth of an office should be taken about 16 ft., as beyond that distance, light is not good, and the extra space loses value; and there is a point where the extra size or depth can only uselessly increase the size of an office and not produce its proportion of rent.

A useful rule for the size of windows is, that

not less than one square foot for every 85 ft. of cubic space, and not less than one square foot for each lineal foot between the window and opposite wall inside should be given. Of course, all such rules would be varied by circumstances, as to whether on the ground, first, or any other floor, and also from what direction the light can be obtained. And generally the height of a window may be half the depth of a room less 2 ft., and the width of a window one-third the width of a room. Good, pleasant daylight is of the first importance, and there is a general difference of opinion as to the proper aspect for this. Some hold that only the north light is good, while others that no building is well planned that is not so arranged that there is a little sun in each room during a part of the day. The latter opinion is certainly the best; and, although this is a difficult problem when the irregularity of the streets and frontages in most towns, and the height of adjacent buildings near are so very variable, under all circumstances it is better to lay down what is the best direction for the daylight to reach the windows on any site, and this of course can be more readily arranged on a fairly rectangular site.

The first point to decide is the best axis for the open areas or well openings. Take the average day, and suppose the sun rises at six (see diagram, p. 465), 6.E. will equal 6 a.m., and 6.W. will be 6. p.m. The usual hours of business are, say, from 9 to 5, and then the angle, 509, if bisected, will divide the hours of sunlight equally, and it is this line which should rule the direction of the greater length that open areas and well holes should have. This will be found to be 15 deg. east of north. The open area or court should be made rectangular, not square, and lengthways, north and south. If the line O O be taken as 15 deg. east of north, a well hole should be formed as A B C D. A portion of sunlight (every day that the sun is visible at all) would go into all the windows in the walls, A B, B C, C D, during each day, and in some seasons reach the bottom of the well hole, and, at any rate, it would reach the maximum distance at all times.

If you have followed this proposition carefully you will at once see that if in any town the roads have this direction of 15 deg. east of north, and the cross roads at right angles to them, then will be a great advantage. This is not often to be gained, but it has been noted that this happens to be near the prevailing direction in New York City, and the advantage must be considerable, although it will not be apparent to many.

Following up the proposition of the proper axis for open areas for obtaining the best and most useful daylight to buildings, I have taken the two sets of drawings and following remarks from the *Architectural Record*, December, 1893, and June, 1894.

The conditions for a successful building for use as offices are :—

I. Ease of access.
II. Good light.
III. Good service.
IV. Pleasing environment and approaches.
V. Maximum rentable area consistent with economy.
VI. Ease of rearrangement to suit tenants.
VII. Minimum cost with true economy.

The plans A and A A shew two buildings as erected, and B and B B as it is suggested they should be.

For good light, experience confirms the statement that courts should have their long axis north and south. In the plan A it will be seen that the court is of irregular shape, but with the long axis east and west, and while the court area embraces 150 square ft. more than in the plan B (as we say it should be) yet its service in lightings is decidedly less. The rentable area in B is apparent, and the fact that it is possible to have fourteen different tenants on each floor, instead of five as in A, is a consideration which would enhance the value of the building, if erected as suggested. The arrangement in the plan B gives an area of 220 square ft., or about 10 per cent. more than in A. The other illustrations in comparison are made on the drawings A A and B B.

As to the arrangement for good light, it is generally accepted that the requirement is that every portion of the office should be within 20 to 25 ft. of a window, and that that window should not open directly to the south. It is to be hoped that the disadvantages due to the direct south light to an office will soon be appreciated, and the advantage of a court or open area, with its long axis north and south, more fully understood. Offices, on a bright day, facing to the south have to have the blinds partially closed in order to reduce the glare from the sun, the consequence being the back portion of the office has to be lighted, possibly by gas or other means. The corridors in the plan B B, as suggested, would be sufficiently light with glass in the doors, and fanlights over.

The comparison of these two sets of plans, showing buildings as erected and suggested, are presented as having a considerable bearing on the matter under discussion, and is also a subject which architects in particular are so greatly interested.

Upon valuable sites where the amount of available daylight is very limited, it is necessary that the least possible space be appropriated as mere open areas for light. To show the difference of opinions on this matter, Mr. Boult, of Liverpool, compiled the accompanying table, which speaks for itself, comparing the different areas so appropriated in five different competitive drawings submitted for the new Stock Exchange, Liverpool, about fifteen years since.

The plot was 49 ft. to Dale-street, depth 197 ft., back width 36 ft., and the total area 9,195 ft., the only street outlet being Dale-street.

COMPARISON OF SPACE SACRIFICED FOR LIGHT.

Designs.	Basement.	Ground Floor.	First Floor.	Second Floor.
Argus	323 ft. 1 in 28·4	570 ft. 1 in 16·0	1,030 ft. 1 in 8·9	1,950 ft. 1 in 4·7
Grand Trunks	None.	4,121 ft. 1 in 2·2	4,121 ft. 1 in 8·2	4,121 ft. 1 in 2·2
Shamrock	45 ft. 1 in 204·3	260 ft. 1 in 35·3	1,822 ft. 1 in 5·0	3,097 ft. 1 in 3·0
Coupon	None.	390 ft. 1 in 23·5	2,283 ft. 1 in 4·0	2,213 ft. 1 in 4·0
1877	None.	1,186 ft. 1 in 7·75	1,380 ft. 1 in 6·6	2,859 ft. 1 in 3·2

It may also be useful to compare the rent-producing area shown :—

RATIO OF SPACE YIELDING RENT TO THE WHOLE AREA OF SITE.

Designs.	Basement.	Ground Floor.	First Floor.	Second Floor.
Argus	1 in 3·9	1 in 2·32	1 in 1·88	1 in 2·14
Grand Trunks	1 in 1·6	1 in 1·26	1 in 2·23	1 in 1·70
Shamrock	1 in 2·24	1 in 3·0	1 in 1·94	1 in 2·60
Coupon	1 in 1·76	1 in 2·30	1 in 1·75	1 in 2·35
1877	1 in 1·9	1 in 2·97	1 in 1·66	1 in 1·54

Notwithstanding the proper arrangement of well-holes and light openings in the lower floors, it is necessary often to assist the daylight by reflectors. These are so generally known, and their good effect so considerable, that it is only advisable to point out that where possible the reflectors should be fixed at the sill instead of half-way up the window, and be exposed directly under the sky, and the light should be thrown up to the ceiling of the apartment, and if this is polished in hard plaster it will greatly assist to distribute the light throughout the room. Where volume of light is required direct, light should be admitted vertically. The light passing through a skylight is very much greater than that through any vertical window, and consequently the light received from the horizontal pavement light is much stronger than from a vertical stall-board.

It is hardly necessary to dwell on the difference of reflection and refraction, but it should not be overlooked. All rays of light move in straight lines, and when they strike upon any object they glance off its surface are wholly or partially absorbed, or pass through the object as in a sheet of glass or a body of water. In the first place, the light is said to be reflected, and in the others refracted, because its course is partially diverted from the right line in which it left the luminous body, and its direction bent or broken back according to the difference in density between the two media. A common illustration of this is the contortion of a stick partially immersed in water, or a coin placed at the bottom of a bowl, so that it is partially seen over the edge, and when the bowl is filled up with water the coin will come into full view from the same point.

The direction in which light is reflected depends upon that from which it proceeds; it is always such that a perpendicular to the surface at the place of impact bisects the angle formed by the arrival and departure of the ray. Each half of the angle represents the angle of incidence or the angle of reflection; those angles are always equal, and always in the same plane, one being known, the other is readily ascertained.

The perpendicular is termed the axis of incidence, the first ray the incident ray, the other the reflected ray. It is by the reflection of the rays impinging upon them that objects become visible, and the reflective powers of the objects are very variable. At a perpendicular incidence, water reflects only eighteen rays out of every 1,000, and glass only twenty-five, while Mercury reflects 666. When the rays strike the surface obliquely, the reflection is augmented; at an incidence of 40 deg. water reflects twenty-two rays, at 60 deg. sixty-five rays, at 80 deg. 333 rays; while at an incidence of 89½ deg., where the light almost grazes the surface, it reflects 721 rays out of every 1,000.

Thus, as the obliquity increases, the reflection of water approaches and finally overtakes the reflection from mercury, but at no incidence, however great, is the reflection from water, mercury, or any other substance *total*.

Any beam of light meeting any refracting surface obliquely, it is obvious that one part of the beam will meet it before another; it is thus hindered in its motion by it as wind is hindered, but not stopped, by the trees. Trace a ray A B (fig. 41) to the refracting surface C D, marking off the assumed length of its waves by the transverse lines. The front will be retarded at E before it is retarded at F, and we may assume the retardation is such that the wave in the denser medium is only propagated to G, while in the rarer medium it reaches H. It is plain that the beam must swing round, but when the side F also reaches the denser medium at H, the whole will be retarded alike, and the beam will proceed as before, only slower and in a different direction. As the beam emerges from the denser medium, the reverse of what has been described occurs, and, provided the refracting medium is of uniform density and thickness, the beam of light proceeds in a path parallel with its former course. In lenses and prisms the emergent beam takes an oblique path, and in the case of lenses either convergent or divergent (according to the kind of lens), and the position of the lens relative to the object.

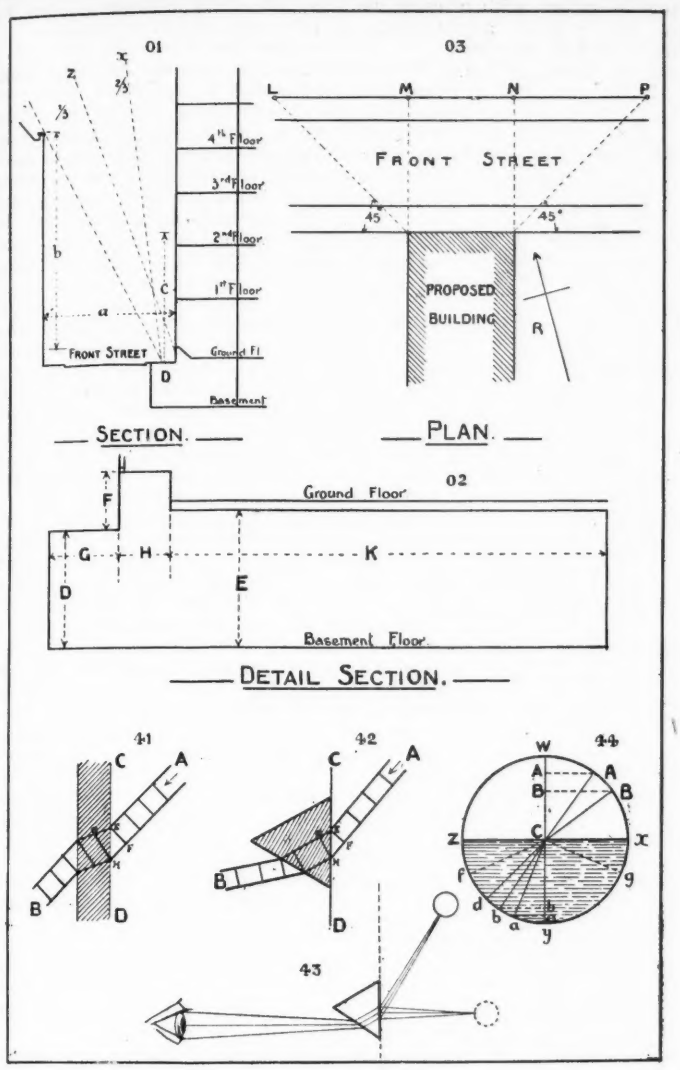
In fig. 42 the upper side of the beam of light is still further retarded, and therefore the beam must swing round again and pass out in quite a different direction to that of entry, so that a beam of light passing through (a prism) is permanently deflected. For example (fig. 43), the sun viewed through a prism, as shown, will appear to the observer in a lower position; the light in this case is twice refracted—once on entering the glass and again on leaving it.

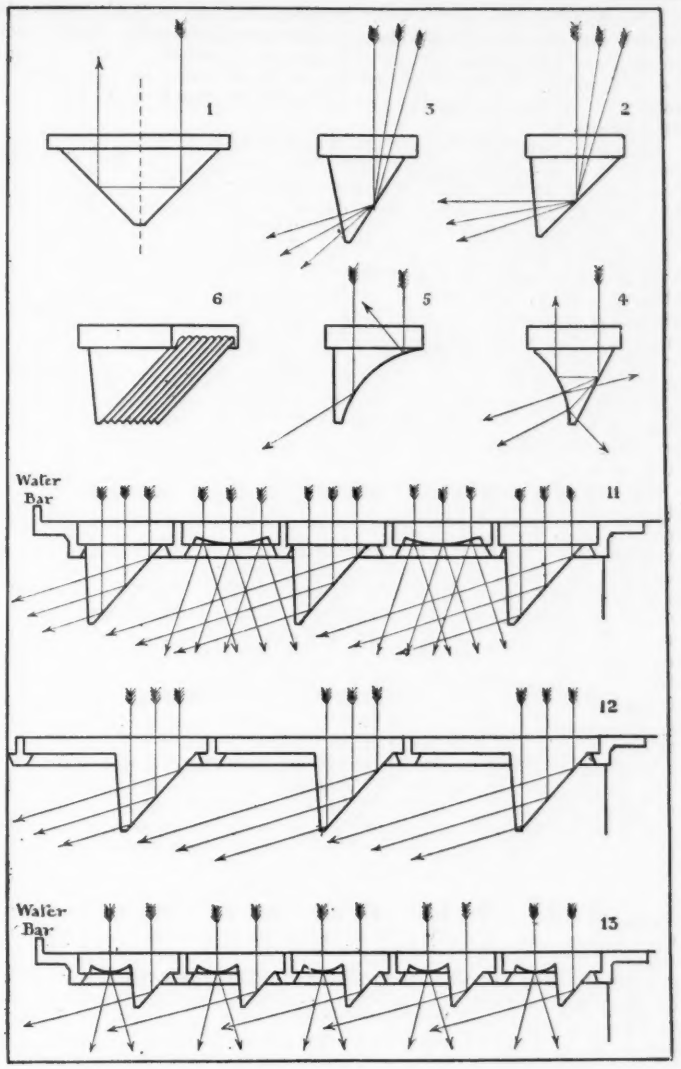
The principle on which the measurements of refraction are based was discovered by Willebrod Snell, and is explained as follows :—

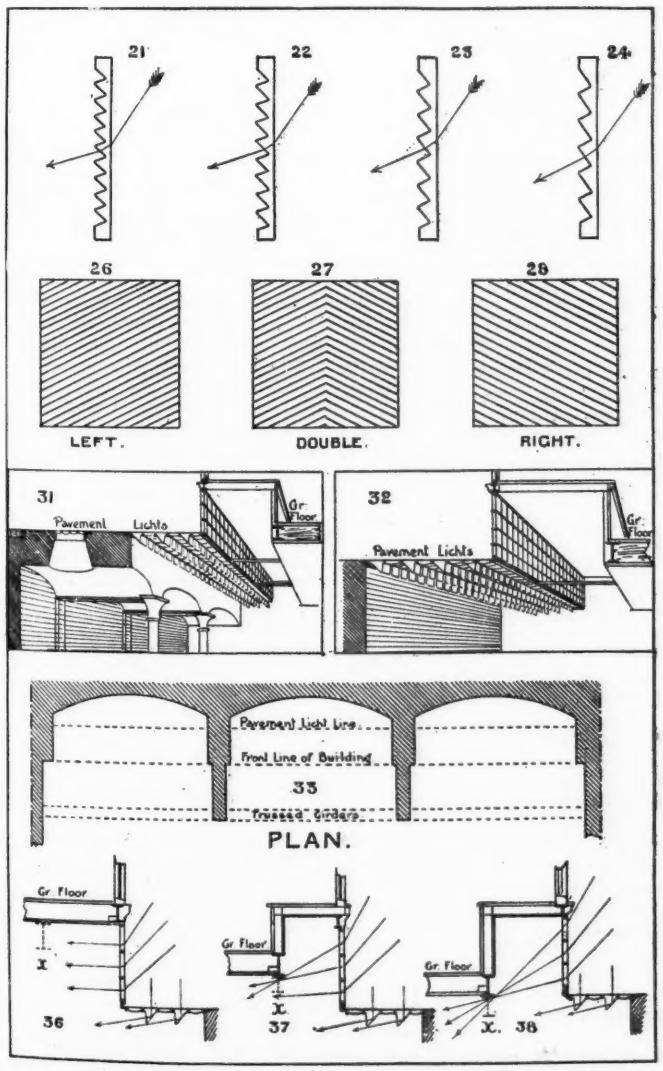
Let W X Y Z (fig. 44) represent the outline of a circular vessel containing water, and X Z the surface of the water. When the ray is incident along W C, perpendicular to X Z, it is not refracted, but reflected on the same line; when it is incident along A C, it is refracted at C, and strikes the circle at a; when it is incident at B C, it is refracted to b. From the ends of the incident rays let A A and B B be drawn perpendicular upon W Y, and from the ends of the refracted beams let the perpendiculars a a and b b be drawn. Measure the lengths of A A and a a, and divide the one by the other, and there is a certain quotient. Divide B B by b b and they give the same quotient—that is the ratio between the sines of the angles of incident, and the sines of the angles of refraction is constant. Snell found this quotient to be a constant quantity for each particular substance, though it varied in amount from substance to substance. He called the quotient the index of refraction.

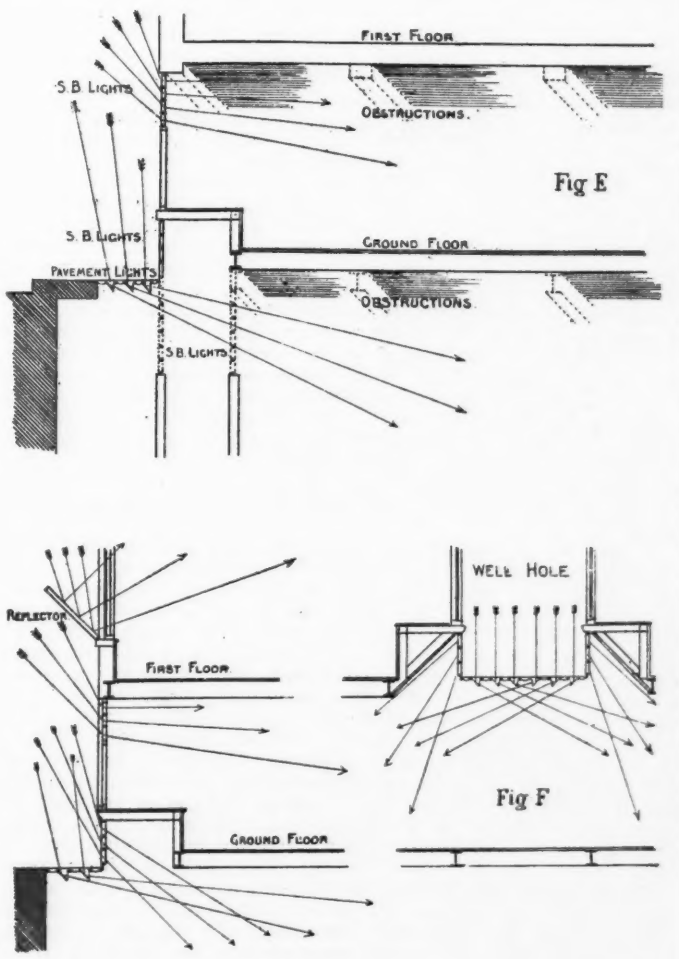
According to Brewster, the index of refraction is—

For glass, two of lead to one of flint	1·830
Plate glass	from 1·514 to 1·542
Crown glass	from 1·525 to 1·534
Water	1·336









Illustrations to Paper on "Interior Lighting."

e

In comparing the lenses used in pavement lights I assume the index to be 1·5 ; therefore the angle of refraction, on entering glass from the atmosphere, is two-thirds of the angle of incidence, and on leaving the glass it is half as large again.

Referring now to the lenses and prisms that are most useful in pavement lights and stall boards, shop fronts, offices, windows, &c., the first kind of glass probably used in decks or floors was undoubtedly the common "ship's deck light," which is a solid mass of glass with a flange all round to support it in the adjoining floor, and with a heavy drop or triangular wedge on the under side. Whether this drop was originally intended for strength, or for increasing and distributing the light, is doubtful ; there is no doubt about the strength, but if you look at the lens on the diagram (fig. 1) it will be seen that all the vertical rays are reflected outward again from the sloping faces on either side.

We now take practically the same block of glass (which for our purpose is cut in two) and open it outwards, and you will at once see the marvellous result, and it is this principle which has been the foundation of "Haywards' patent semi-prism pavement lights," figs. 2 and 3. It will be seen that the vertical, or nearly vertical, ray is thrown out through the upright, or nearly upright, front of the lens at an angle a little below the horizontal, and the rays falling on the top of the lens at various angles (fig. 2) are thrown out in a fan shape, and the steeper the back slope, with the nearly upright face a little more inclined (as in fig. 3) projects the light lower than in fig. 2. Of course, such an important result, which can be obtained from a series of prisms grouped in a frame as a pavement-light and protected by a patent, has been attempted by various other devices or sections of lenses, as in figs. 4, 5, 6, and 7. These are lying on the table, and the average result can be got by holding them in the hand and comparing one with the other. The result is generally bad, and that the makers of such lenses should have been given a certain amount of encouragement by architects using them shows to a certain extent the comparative neglect in deciding such an important matter as to which is the best kind of pavement-light for producing the best illuminating effect in any building. It will be seen, too, from sec. 11 that some thought is required in assembling the lenses in a properly-constructed frame, so as to produce a satisfactory result.

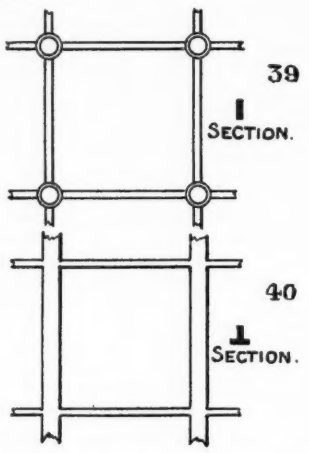
Section 12 is an attempted improvement on sec. 11, but unfortunately there is a great difficulty in making such irregular shaped lenses perfect, when one part is so bulky and another so thin, on account of the inequality of the glass and tension in the lens, therefore this lens in practice is a failure. This tension also limits the size that can be safely made.

Fig. 13 is a neat arrangement of a small prism in each pocket, and may be often of use when the area of pavement light can be large.

Now, coming to the vertical lights used in stall boards, or applicable to shop fronts, windows, &c. The lenses used are "Haywards' reflecting lense" (as in figs. 21, 22, 23, 24), which are made at different angles to suit different circumstances. Such lenses are usually employed under the shop or office front, and the application is better explained in figs. 36, 37, 38.

In plan fig. 33 and section 31 and 32, the combined arrangement of pavement lights and stall boards will be clearly understood. It should be noted that if any girder be introduced (as shown in dotted lines x, x, x in figs. 36, 37, 38) a very considerable portion of the light would be lost, and a heavy shadow would be cast along the ceiling. Pavement light should be supported by bearers transversely, and as little obstruction or thickness of metal be introduced at the junction of the vertical stall board with the horizontal pavement light, and this is easily arranged by turning up the back edge of flange as shown in secs. 11 and 13, which is generally called a "water bar."

Fifteen years ago Messrs. Hayward Bros. fixed in two fronts of the ground floor premises, used as offices, &c., Haywards' reflecting stall board lights. The result is very effective, and the light often too strong ; in fact, it is necessary to place the desks so that the clerks do not face the front light. These lenses can be applied in various other positions, as in leanto or sloping roofs, &c. The frames of the upright or stall board lights are sometimes made with rebates to the horizontal bars only or vertical bars only, and in others with a perfectly plain sectional bar without any rebate, with a small button at the intersections to retain the glasses in their position. See figs. 39, 40.



Diagrams E and F are general sections of a basement and front, in which it will be seen that a combination of several devices, as already more or less explained, can be introduced to such an extent, either single or combined, as may be desired. It will be seen that the upper portion of the windows can be glazed with the reflecting stall board lenses, to throw the light to the back portion of the ground floor in almost a horizontal direction, or to throw the light slightly upwards on to the ceiling and thereby illuminate the back portion of the office. In the diagram (E) it will again be seen the great disadvantage of running any transverse girders or beams below the level of the ceiling across the direct line of light, these girders or beams would throw heavy and objectionable shadows, so that the ceiling, instead of being light and bright, would be shadowed and the major portion of the reflected light lost. Under the stall plate stall board lights can be fixed vertically as in the window above, and in the pavement light "Hayward's Semiprism Lenses," fixed horizontally, and these pavement lights could throw the light on to a stall board light, fixed as shown when a partition is advisable to divide off the front part of basement, and this would throw a volume of light into the basement.

In the other sectional drawing F, the ordinary daylight reflector is introduced at window-sill on first floor, and near the middle of the depth in well-hole a series of pavement lights and stall board lights to throw the light all round same are introduced ; the arrangement of lenses throwing reverse ways should be noted. It will be seen that one or two of these plans can be adopted with more or less advantage.

Many modifications suggest themselves to architects and others, and with the information called for in diagrams 01, 02, 03, the best arrangement can readily be worked out.

It will be noted that when light is obtained from definite sources, it must be taken to act in some line of greatest volume, and referring to the diagram 01, the best light falling on the pavement light at "D" will be at about one-third of the angle made by the front of the building, and the line of light from the coping of the opposite building, or in the direction "x," and from the stall board lights at about two-thirds, or as direction "z."

Again, if the street is very narrow and a high building directly opposite, the light can be usefully assisted by such lenses as figures 26, 27, and 28.

In all cases, the tops of the lenses of pavement lights and front of stall board lenses should be plain flat surfaces and kept clean. However, ornamental effects can be given, but this is generally done with a proportionate reduction or waste of light. Also, a more ornamental appearance can be given by tile inlays between the lenses of pavement lights, or a good foothold by a non-slipping material, such as lead, cement, facing, &c.

Specimens and samples of such lights are numerous and difficult to show to advantage away from the factory, on account of their weight, and also because they cannot be seen in position.

In conclusion, I would add that an effective result can only be produced with the fullest information being supplied, as in the diagrams 01, 02, and 03. They should be carefully examined, so that every advantage may be taken to fulfil the particular result desired.

The Chairman, in opening the discussion, said that Mr. Eckstein had suffered under the disadvantage of describing work to prove the utility of which ocular demonstration was needed ; and no doubt the author would have preferred to have read his paper in a basement lighted up by the many devices which he had described. The question of reflected light in connexion with lighting was an important one, and there was no doubt that it had not been developed to anything like the extent which was possible. The subject was of special interest to architects practising in large cities like London, and some such method of lighting was of more value in a large town than in the country. It was on account of the value of light in narrow thoroughfares in a large town that reflected lights were used, and it was rather surprising that more had not been done in this direction—not only in providing the light, but in directing and conveying it to different parts. The subject was a scientific one, and a great deal of ingenuity was necessary in order to get the best results from lenses. In narrow thoroughfares, and in cities particularly, warehouses and places of business were constructed with small areas and shafts for light, and these, as had been seen in the recent great fire, were a source of great danger; and if proper light could be obtained by reflectors such dangerous areas and shafts could be done away with. He had been very much interested in a visit which he had just made to Hill-street, Finsbury, where he saw the use of reflected lights on a scale he had never seen before. Not only was the light brought through the prism, but it was conducted and directed in a remarkable manner. Mr. Eckstein had referred to the question of the vertical stallboard light being made use of to reflect the light either horizontally or at any desired angle in the basement, but at Hill-street, by means of dropped vertical lights, a tremendous lighting power was obtained. It was astonishing the distance that light could be conveyed by reflectors without taking up the floor space which was so valuable in a basement. At Hill-street, where the work was being shown by an American firm, the Luxfer Prism Company, prisms similar to those which Mr. Eckstein had shown were to be seen, but there were others which were an improvement. The company claimed another advantage for their lights: they could not only be used in the basement, but on other floors, &c. These were matters of a practical character. The system had been carried out to a large extent in Chicago, where reflected light was used in a way that English people would be surprised at. For instance, reflectors were used in such a way as to form a canopy. The material which the Americans used was a clear and permanent one, whereas silvered reflectors, used in this country, soon got dirty and cracked. The Americans also fitted the squares of glass together by a process of electro-glazing, which did away with the usual framework, which was an obstruction to the light ; the result was practically one sheet of glass, and there was undoubtedly a great future for this wonderful process.

Mr. Banister F. Fletcher, in proposing a vote of thanks to the lecturer, said that the paper had really amounted, to a large extent, to a somewhat practical treatment of the law of optics as affecting architecture, and it was of special importance to an architect whose practice was in a city where every available inch of light was necessary. The lecturer had said that a useful rule for the size of windows was not less than 1 sq. foot for every 85 ft. of cubic space, and not less than 1 sq. ft. for each lineal foot between the window and the opposite wall inside. That seemed a larger percentage than Gwilt allowed, but no doubt it errs on the side of light. The lecturer also exhibited two plans of buildings where two methods of giving light were adopted. He, the speaker, could not agree that the scheme which had been suggested was better than the one carried out. In the suggested scheme the area was shown north and south : that was an excellent way where it could be done, but in practice they had to deal with the areas as best they could, and when they had two rather fine streets, as in the case in point—the building at Chicago—and light practically more than half the rooms from an internal court when they could be lighted from a wide street was not the sort of thing any architect would do. It seemed to

him that the condemned scheme would be the one that ninety-nine architects out of every hundred would carry out, as he would get practically all his rooms lighted from a street rather than from a court. Mr. Eckstein had referred to the use of reflected lights in the upper floors of buildings; he, the speaker, had never seen it done, but he should imagine it would be a good treatment, though there might be one inconvenience, viz., the cleansing of the lights. Although in Chicago this method of lighting was used to a large extent, he did not remember having seen the canopies referred to by the chairman.

Mr. F. G. F. Hooper, in seconding the vote of thanks, said that the question of lighting was not confined only to street architecture, and city architecture especially, but it affected all buildings. As Mr. Fletcher had said, the exigencies of many sites made it extremely difficult to carry out the lecturer's ideas as to light shafts; but if the principles were borne in mind designs would, in many cases, be beneficially affected. Mr. Eckstein had confined his remarks to the use of lenses, but no doubt many would have noticed how a glass with an irregular surface diffused light which a clear glass failed to do. He had used recently, with some success he believed, Ramsey's muffled glass, which increased the light in a room where the window space was small.

Mr. Max Clarke asked what percentage of light was lost after six months' traffic where floor-lights were used? Were not stallboard lights much more effective?

The vote of thanks having been agreed to,

Mr. Eckstein, in reply, said he copied the two plans referred to by Mr. Fletcher from the *Architectural Record*, and he thought it better to leave them in the hands of architects as a suggestion as to the treatment of a principle. Pavement lights required to be cleaned occasionally as did other glass. He would like Mr. Max Clarke to see some lenses which had been in use sixteen years. He was interested in the Chairman's remarks, and if he had occasion to read a paper on the subject of lighting before them again, he might deal with the system referred to by the Chairman. Architects should visit Hill-street to see what could be done. It was interesting to see the way in which the Luxfer Company was dealing with the question, and there was no doubt a great future before the company, and more particularly with what was called "electro-glazing"—a process which was intensely interesting. He thought there was good reason to think that cathedral glass could be treated by this system.

The Chairman said that another paper was to be read that evening entitled, "Electric Lighting as Applied to Architecture," but, unfortunately, the author, Mr. Tom Ekin, was unable to be present, but the Junior Hon. Secretary had undertaken to read the paper for him.

Mr. S. B. Carvill then read the paper, which, together with some notes of the brief discussion which followed, we are compelled to hold over until next week, for want of space.

Illustrations.

OUR lithograph illustrations this week are all of Aberdeen buildings, and are all referred to and described in the leading article in this week's issue, to which the reader is referred.

The illustration of the Town House is from a water-colour drawing lent by the present representative of the architects; those of the Marischal College are from a photograph and a pencil drawing lent by the architect for the new work, Mr. A. Marshall Mackenzie. The illustrations on the remaining sheets are all from photographs.

THE ARCHITECTURAL ASSOCIATION SPRING VISITS:

CROWN THEATRE, PECKHAM, AND POLICE STATION, CAMBERWELL.

ON the 7th inst. the members met at the Crown Theatre, Peckham, now in course of erection under the superintendence of Mr. Ernest A. Runtz, the architect, who kindly attended the visit and explained the various conditions and requirements involved in carrying out what promises to be a most luxurious and comfortable theatre.

The site is admirably chosen, with an extensive frontage to the High-street and a road on each side of the block, which has rendered the intricate question of entrances and exits an easy problem. Originally, plans were prepared with the stage backing on to Marmont-road, but eventually the present scheme was adopted as being more suitable from a stage manager's standpoint.

Strictly speaking, from a student's point of view, the unfinished state of the building rendered it more instructive than it will be at a later period. Most of the constructional ironwork was in position, and clearly demonstrated the cantilever principle of carrying the circle and gallery without any columns to obstruct the view of the stage from the audience. The auditorium, which backs on to the High-street, is 62 ft. in width by 52 ft. in depth, and 48 ft. in height to the ceiling.

The stage, which is schemed to allow for all the modern mechanical appliances, promises to be one of the finest in London. The dimensions are 120 ft. in extreme width and 40 ft. in depth, ample space being provided for raising the scenery the full height above the proscenium. Adjoining the stage there is a scene painting-room, sufficiently large to take three frames, and with sunk wells for the lowering of the canvases; this enables the scenic artist to work from the stage floor level at all times. There are seventeen dressing-rooms arranged for easy access to and from the stage.

The accessories to the auditorium, such as the foyer, saloons, and retiring rooms, cover a large area, and have been made a special feature of the planning, and are of such a nature that the public, when visiting the theatre, will not only have the opportunity of seeing the play, but of enjoying the surroundings. Each department will be served by a large saloon, and the foyer and saloon in connexion with the grand circle will be on a larger scale than in most of the West End theatres. From the foyer there will be access at one end to the loggia, in a position above the front entrance. Judging by particulars gathered of the proposed decorative treatment of this part of the building, we shall have cause to congratulate Mr. Runtz upon having produced a most happy innovation in modern theatre designing.

With regard to the decorative scheme of the auditorium, it may be stated that the title of "Crown" has suggested to Mr. Charles Buchel, who has been entrusted with the work, a wide scope for allegorical treatment. Inasmuch as the Imperial crown of our Queen embraces the world, and "the sun never sets on her dominions," in the design for the ceiling will be found painted panels representing the colonies of England surmounted by their arms, above which figures holding the crown with a symbolic sun above are placed. Intermediate panels, indicative of Art, Music, the Drama, and Literature also find a place, and in the frieze over the proscenium opening it is intended to have a conventional painting of England and her children. The wall-paper has been designed by Mr. A. C. Breden, and from a drawing of this, which was exhibited, his unobtrusive treatment of the crown intertwined, but still an integral feature, was generally admired. The thanks of the members were conveyed to Mr. Runtz for allowing them the opportunity of gaining much useful information. The work is being carried out by Messrs. Colls & Sons.

At the conclusion of their visit to the theatre, the members proceeded to the sub-divisional police station, a new building in the same thoroughfare at Camberwell. Mr. J. Dixon Butler, the architect, has produced an interesting block of buildings embodying the necessary requirements for this special class of work. Though there is but a small frontage to Church-street, the site is of considerable extent, and there has been ample space for the separate disposition of the administrative department from the single men's quarters, which are placed on the rear portion of the site with a separate entrance. The inspectors' room and Criminal Investigation Department occupy the front portion of the ground floor, with the charge-room adjoining. Leading directly from the charge-room are two corridors communicating with the cells for the male and female prisoners. The internal walls of the cells have rounded angles, the whole of the brickwork being painted. Heating gratings with fresh-air inlets are placed in the walls near the floor at the end of each cell, and outlet ventilators in the opposite walls; these outlets are conveyed to one shaft by means of a trunk The space under the long, low cell building is utilised as a covered parade ground. The section house provides accommodation for twenty-four single men. In the basement are brushing, clothes, boot, and drying rooms. On the ground floor are kitchen, scullery, library, mess, and day rooms, with a stone staircase in a central position leading up to two stories of dormitories. The contractors are Messrs. W. H. Lascelles & Co.

ARCHITECTURAL SOCIETIES.

DEVON AND EXETER ARCHITECTURAL SOCIETY.—The annual meeting of this Society has just been held at Exeter, under the presidency of Mr. James Hine, of Plymouth. The annual report was presented by the Hon. Secretary (Mr. Harbottle Reed). Among other matters it referred to the resolution which had been forwarded to the Exeter City Council with regard to the preservation of the Guildhall; also to the formation of students' classes. The balance-sheet was submitted by Mr. O. Ralling, the Hon. Treasurer, after which the retiring President addressed the meeting. In the course of his remarks he said there was no work so open to criticism as the work of architects. Public and private, free and open, candid and spiteful, it lasts for all time, or as long as a building stands. He had no doubt when the Jacobean masons were piling on the agony of freestone and ornament over each sturdy, and now long-suffering, column of Exeter Guildhall façade, there were loud murmurs and solemn head shakings from venerable critics who had sworn fealty to the Perpendicular mode of construction. Well, that delightful old building, although it had long passed its second centenary, was still open to criticism. As an example, there were many things about it one would be desirous of avoiding, and nervous in imitating; yet so quaint and interesting was it in outline, and so refined in its details, that every sympathetic observer loved it. Its loss to the street would be simply irreparable, and Exeter would not be the same Exeter without it. Why was it that in more modern towns, fashionable and unfashionable, which had sprung up during the present century the impress of architecture was so imperfect and unsatisfactory? Because, for the most part, they had not been the creations or work of architects. Trade-catalogue architecture might be all very well from a strictly commercial and economical point of view, but the tendency of it was to destroy all individuality in a building and to drag architecture proper to oblivion. Buildings were being pulled down in all parts of England possessing historical interest and features of great architectural beauty. Were they to be supplanted by lifeless structures of this automatic type? Let us hope that in the coming century, as in all great periods of architecture, buildings might be more and more the reflex of the individual mind of the architect.—A vote of thanks to the retiring President was moved by Mr. Crocker. This was seconded by Mr. Arnold Thorne, Barnstaple. Mr. B. P. Shires, and Mr. J. Jerman, supported the vote of thanks which was agreed to. The following gentlemen were then elected for the ensuing year:—President, Mr. James Crocker; Vice-President, Mr. H. G. Luff, Devonport; new members of Council, Mr. James Jerman, Mr. S. Dobell, and Mr. B. P. Shires. The Hon. Treasurer (Mr. O. Ralling) and the Hon. Secretary (Mr. Harbottle Reed) were re-elected. Votes of thanks were accorded the retiring members of the Council (Messrs. C. Cole and E. G. Warren), and the Hon. Secretary and Hon. Treasurer. A luncheon was afterwards held at the New London Hotel.

GLASGOW ARCHITECTURAL ASSOCIATION.—The usual monthly meeting was held in the rooms, 187, Pitt-street, on Tuesday, the President (Mr. W. T. Conner) in the chair, when Mr. Oscar Paterson, Glasgow Art Workers' Guild, and Lecturer on Technology of Glass, City and Guilds of London Institute, &c., read a paper entitled "About Stained Glass." Treating of the art side of the question, he summed up the salient points thus:—"Circumstance of material governed the art of stained glass in its first stages of development. As 'art' progressed with a greater force than 'industry,' stained glass was more or less trammelled by difficulties of material; but when a certain progress and facility was attained, each craftsman followed out his art on the lines of his taste, temperament, or circumstance. Every stage of industrial progress is indicated in the development of stained glass, the most

marvellous being in the present century." The practical side in design he explained on slides illustrating old and modern work.

BRISTOL SOCIETY OF ARCHITECTS.—The last ordinary meeting of this Society for the present session was held at the Fine Arts Academy, Clifton, on Monday, the 9th inst., when a thoroughly practical paper on "Plumbing" by Mr. Geo. Tuckey was, in his unavoidable absence, read by the President. The conditions of competition and instructions to students for prize drawings were read, and it was decided to print the same for circulation, together with a letter received from the Principal of the Merchant Venturers' Technical College, stating that it was proposed to hold a special course of lectures for students desirous of presenting themselves for the Intermediate examination of the R.I.B.A. It was decided to call a special meeting of the Council to consider the question of revising the Society's by-laws, so as to provide for the annual election of two Associates on the Council.

EDINBURGH ARCHITECTURAL SOCIETY.—At a meeting of this Society, held on the 4th inst., in Dowell's Rooms, Mr. William N. Cumming in the chair, a lecture was delivered by Mr. A. N. Paterson, entitled "Evolution of the House: the Modern Product." Mr. Paterson arranged his lecture under three heads—(1) The Modern House; (2) The Country House; (3) The Town House. Particular attention was given to aspect versus prospect in the planning of the mansion, the smaller country house or villa, and the cottage. In dealing with the town house, the limitations of light, air, and area were gone into, and in overcoming these the American style of planning was referred to.

EDINBURGH ARCHITECTURAL ASSOCIATION.—The annual meeting of the Edinburgh Architectural Association was held on the 4th inst. in the Royal Institution, Princes-street, Mr. Thomas Ross, the President, in the chair. The report of the treasurer showed that the total membership of the Association stood at 286, that the total income for the year amounted to 135*l.* 10s., and the payments to 132*l.* 4s. 11d. The Secretary stated that in connexion with the memorial which they had presented to General Sir R. Murdoch Smith, suggesting that the Museum of Science and Art might remain open between four and six o'clock on Saturday afternoons, he had received a communication from Sir Murdoch Smith to the effect that he had submitted the memorial to the Lords Committee of Council on Education, with a recommendation that the request therein set forth be acceded to. Mr. Ross was re-elected President; Messrs. John Watson and James Bruce, W.S., were re-elected vice-Presidents; and Messrs. T. Fairbairn, A. Hunter Crawford, and J. Johnston, were re-elected secretary, excursion secretary, and treasurer respectively. The President afterwards delivered his valedictory address, the subject of which was "Lesser Known Churches of Scotland." Mr. Ross, whose address was illustrated by limelight views, began with the earlier Norman churches, such as Leuchars, Dalmeny, and Tyninghame; next he directed attention to the elaborate church towers at Dunning, Muthill, and elsewhere in the district of the Tay; and dealing lastly with later churches, Mr. Ross gave an account of the collegiate churches, of which he said there were somewhere between thirty and forty in Scotland, and which were all in the late Scottish Gothic style, and were perhaps the most national works they had, without any affinity whatever to English work.

ARCHÆOLOGICAL SOCIETIES.

ROYAL ARCHÆOLOGICAL INSTITUTE.—At the meeting of this Institute on the 6th inst. (Judge Baylis, Q.C., in the Chair), Mr. Andrew Oliver exhibited and described rubbings of brasses from Whaddon, Dauntsey, and Broughton Gifford, Wilts, and Childrey, Berks. Professor Boyd Dawkins read a paper on the excavations made in Hod Camp, near Blandford, in 1897. This fortress of Hod Hill forms one of a series of strongholds on the River Stour to guard the country to the east from attack from the direction of the low-lying valley of Blackmore. Hod Hill stands on the edge of a precipitous chalk cliff on the eastern bank of the Stour at a height of over 400 ft. above the sea. It consists of a series of three ramparts and two fosses on every side excepting the west facing the river, which itself forms the second fosse. It is roughly rectangular in form, with rounded angles. There is an inner camp within, and to the north-east angle of the Hod camp, known locally as Lydsbury Rings, which is fortified entirely on a different principle to that of the outer. Professor Boyd Dawkins assigned this inner camp to the work of the Roman engineer, whereas the outer stronghold belonged to the time immediately before the Roman conquest, or in other words to a late period in the prehistoric Iron age. The interior of both fortresses contained unmistakable traces of occupation in circular pits, and, in the outer fortress, in circular enclosures. The pits in the outer fortress, sunk from three to six feet in the chalk, were the bases of old habitations more or less filled with refuse, and had flat bottoms. The refuse belonged to two different periods, that at the base to the prehistoric Iron Age, and contained rough and coarse pottery, bones of domestic animals. In some were fragments of human bones, and in one a perfect skeleton was discovered, proving that the body had been interred resting on its side in a crouching posture—a mode of burial prevalent in Britain from the Neolithic Age. In the upper stratum unmistakable proof of Roman influence was to be seen in the fragments of Roman pottery, including Samian ware, iron fibulæ, and oyster shells. The exploration of the pits within the Roman fortress revealed the date of this occupation. Roman remains of various kinds were met with. Among the coins were one of Augustus, struck in the reign of Tiberius, and one of Caligula. With the exception of one coin of Trajan, the whole series belonged to an early period in the Roman conquest or immediately before it. It might therefore be inferred that the military occupation was not continued far into the second century after Christ.

COMPETITIONS.

TOWN HALL, TAUNTON. — Thirteen architects have sent in plans in connexion with the competition for providing designs for a new town hall at Taunton. They are to be adjudicated upon by Mr. E. W. Mountford, and will be exhibited in the Parade Assembly Rooms.

HOSPITAL, LISCARD.—Messrs. Maxwell & Tuke, architects and surveyors, of Manchester, submitted competitive plans for the new central hospital to be erected at Liscard, and the Wallasey District Council have accepted the designs.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of this Council was held on Tuesday in the County Hall, Spring-gardens, Mr. McKinnon Wood, Chairman, presiding.

The Works Department.—The Finance Committee reported as follows:—

"We have considered as to what percentage should be added to the cost of estimated works executed by the Works Department and completed subsequent to March 31, 1898, to cover general and establishment charges. The manager is of opinion that works to the value of 200,000*l.* will be executed during the current year, and to clear the general charges account it will be necessary to add 8 per cent. to the expenditure on wages and materials charged to each work, and we have accordingly adopted this percentage. We shall consider in October whether it will be necessary to alter this percentage, in consequence of the value of work executed by the department exceeding or being less than the manager's present estimate."

Rates of Wages, &c.—The report of the General Purposes Committee contained the following paragraph:—

"The Council on March 22 last referred to us for consideration and report a petition from the London Building Trades Council, asking the Council to alter the radius respecting the rate of wages and hours of labour from twelve to twenty miles. The application is made on the following grounds:—1. Inasmuch as all work undertaken by the Council 'is for the purposes of providing for the necessities of London, and the cost of such work has to be met out of the rates levied by the Council on London, all work so executed should be done under the working rules of the trades concerned and connected with the London district.' 2. 'Outside the twelve-mile radius, and within the twenty-mile radius, there is no recognised association of employers, except in one or two localities, and therefore no general agreement as to the rates of wages and hours of labour can be made.' The Council will recollect that in the report of the Committee to the Council in November last, with reference to the revision of the standing orders relating to the conditions of contract, the question of the radius was dealt with, and it was then decided that the radius should be altered from twenty to twelve miles. Previously to this (in February, 1896) the Committee, in reporting to the Council on the subject, pointed out that the radius of twenty miles had been fixed by the Council on the ground that such a limit would include all places at which the Council might carry out works, as, for instance, sites for asylums, and on the recommendation of the Committee the Council resolved that no alteration should then be made in the radius. Having further considered the matter, we are of opinion that the Council should revert to the twenty-mile radius, and we accordingly recommend—(*a*) That the radius be altered from twelve to twenty miles. (*b*) That the standing orders be revised accordingly."

Sir Arthur Arnold protested against the recommendations, because, in his view, it was a matter of grave import to the business and the reputation of the Council as a Municipal government. With great advantage to the working classes, and without dissent on the part of the employers, the Council had established a system by which the rates of wages and the hours of labour accepted by the Trades Unions and the Employers' Union, "and in practice obtained," were included in the schedule attached to their contract form, and was substantially part of that contract. The essential part of that agreement was that these rates and hours should apply within twelve miles of Charing Cross. He admitted that the only reason for adhering to these rates was because it had been agreed upon by the two bodies mentioned. A great deal had happened since the arrangement was come to, but it was neither dignified nor just to alter that arrangement with every change in the constitution of the Council. He protested against making use of that Council to forward an unwise and impolitic policy, and declared that they would not be holding the scale between labour and capital justly if they adopted the recommendations.

Mr. Beachcroft supported the views of Sir Arthur Arnold, and moved that the recommendations should be referred back. The Council must stand by the compromise which had been arrived at, or the public would have but little faith in their resolutions.

Mr. H. Clarke seconded the amendment.

Mr. H. R. Taylor said that in all the skilled trades London rates were already paid at the Asylum at Bexley, and that of the City Corporation at Stone. Only the labourers suffered by the contraction of the radius; the skilled trades could look after themselves.

Mr. G. Dew said that in country places, where large works were being carried out, and large bodies of workmen were imported, the cost of living and travelling was heavier than in London. Good men could not be got to go to country jobs unless the London rates were in operation, and in the interest of good work it was desirable that the radius should be extended.

Mr. Howell J. Williams said the attempt to alter the radius was being made in the interest of one particular class. He was a thorough supporter of the Works Department, and he hoped that sufficient work would be given to the Department to make it a success. If the proposed alteration were agreed to, it would undoubtedly increase the cost of asylums outside the twelve-mile radius by 10 per cent. Not one word of objection to the twelve-mile radius had been made to the Council of the Master Builders' Association. Why should the present regulation be interfered with? There was a general idea that a London master who was carrying out work outside the twelve-mile radius sent all the men necessary from London. That was a mistake; a few picked men were sent, but the majority were taken on locally. The London rates were higher than those in the country, in consequence of the cost of living, &c., being higher. Would it be fair that local men should be paid, under these circumstances, the same rate as the London men? The alteration would be an unfortunate one, and it was not fair to propose to make it without getting the views of the master builders on the subject.

Earl Carrington recommended the Progressive party to vote for the extension of the radius.

Mr. McDougall said he had found, as Chairman of the Asylums Committee, that they could not get the work done satisfactorily under the present arrangement, and he had therefore given notice to move a resolution in favour of reverting to the twenty miles rule. Disputes arose between the contractors and their men, which led to considerable delay and inconvenience.

Mr. John Burns said that long before the petition of the London Building Trades Council was presented, Mr. McDougall had moved, in the interests of the Council, that it was inadvisable to retain the twelve-mile radius. The present arrangement led to disputes, and it delayed the Council's work. For six and a half years the twenty-mile rule prevailed, and during that time there was practically no inconvenience.

Mr. E. White said that if the twenty-mile radius were reverted to, the members of the Master Builders' Association would not tender for the Council's work, which would go to provincial contractors.

Mr. Goodman having spoken in support of the recommendations,

Sir Arthur Arnold said that, in common fairness, the recommendations should be referred back until the opinion of the Master Builders' Association had been taken upon it.

The Council then divided, and the amendment was defeated by 71 votes to 48.

The recommendations were then agreed to.

Slade Ravine, Plumstead Common. — The Parks and Open Spaces Committee recommended that the Council, without giving any formal consent thereto, do offer no opposition to the Vestry of Plumstead completing the embankment across the Slade in the manner indicated in their letter of November 24, 1897, and in the plans and specification which accompanied the letter; and that the Vestry of Plumstead be informed of the decision of the Council.

An amendment, to refer the matter back, with an instruction to the Main Drainage Committee to look into the matter, was agreed to.

Proposed Sale of a Freehold.—The Corporate Property Committee recommended that the Council should sell to the City Parochial Foundation two small freeholds in Queen Victoria-street for 5,250*l.*

After a long discussion, in which strong objection was taken to parting with any of the Council's property in ground rents, the recommendation was rejected by 55 votes to 52.

The Collapse of a Building in Westminster.—Mr. Crooks asked the Chairman of the Building Act Committee, in reference to the collapse of a building in Westminster, whether the Council's architect would be instructed to give evidence before the Coroner in the interest of the people of London. Mr. Taylor asked whether the Committee was aware that workmen had been employed at night in patching up fractures in adjoining buildings. Was not this a highly improper proceeding? Mr. W. Davies (the Chairman) said when the Coroner had concluded his inquiry it would be the duty of the Building Act Committe to deal with the whole matter. He had no knowledge of anything having been done to adjoining houses, but the Superintending Architect had been instructed to closely watch the interests of the Council. The solicitor and the architect would attend the Coroner's inquiry, and if the Coroner thought the evidence of the latter would assist him the Committee would be glad for him to offer his services.

The Council adjourned at 7.15.

THE SANITARY INSPECTORS' ASSOCIATION.

AT the monthly meeting of this Association, held on Saturday last at Carpenters' Hall, a paper on "Dangers to Health from Defective Sanitary Appliances" was read by Mr. W. Wilkinson (Altofts), Mr. G. T. Dee, Chairman of Council, presiding. In the earlier proceedings a discussion arose on the nomination of an Assistant Sanitary Inspector, a large number of the members present being of opinion that Assistant Inspectors were only entitled to be elected as Associates. After discussion, Mr. Ellenden, Assistant Sanitary Inspector for Kensington, was elected as a member by a majority of one.

The main object of the paper was to show what were the most common defects in sanitary construction to be expected, and how they were to be discovered and remedied. In old property, box drains running through the basement might often be found; some formed of dry rubble-stone, others of brick with flag coverings, and others, again, with field butt-jointed pipes, laid, perhaps, on uneven bottoms, at different angles, with gaping joints, and with pipes and sockets cracked or broken in places, the inevitable result being that the trenches in which they were laid, and which were usually in close proximity to the walls (where they were not in the dwelling itself), generally became sewage-logged. A favourite position for the cesspool formerly was the cellar, or some position as close to the house as possible. Even now, when these old abominations were universally scouted, the equivalent of a cesspool would often be found in the yard or court, in the form of a gully of large capacity, which was seldom effectively flushed and rarely emptied by other means. Such gullies were death-traps—the sources in which the most dangerous gases could generate, poisoning the passer-by or the inmates of the adjacent dwelling, through the open windows or doors of which the gases were sucked, by the difference of temperature. The safest form of yard gullies had, like the Cecil, little or no room for deposit, with an outlet at the end of the trap larger than that at the bottom, so as to ensure that whatever passed through would flush it entirely. If a trap with an 8-in. inlet were used where one of 6 in. would do, the velocity of the current required to drive the solids through would be diminished. This was a point on which he feared architects still often erred, in specifying drains of too large a size. Instances of all these defects could be cited constantly from his own every day practice, and from the practice of every sanitary inspector of much experience. Closets, traps, and bends could not be too strictly examined to discover any projections that might exist in the interior, through the sweating through the joints of solder or cement. Hair-combings and other matters in bedroom refuse would catch on such projections, and there was then a danger of the gradual emptying of the trap by capillary attraction where the closet was long out of use. With regard to the question of the ventilation of drains, the lecturer said he was entirely against the surface ventilation grates, as well as the dangerous practice of connecting from the sewer into manufacturing chimneys. Sanitary engineers had expressed a clear and decided opinion against the present system of taking up ventilating shafts on the outer walls of houses unless they were run up to a great height above the roofs. When the air was still, the sewer gases might be drawn down for some distance and might pass through the open windows of bedrooms, or down such flues of the chimney-stacks as might not happen to be passing heated air, and so disseminate deadly poisons through the house even more effectually than would be done through defective drains. There was only one way of dealing with this danger. The foul gases must be absolutely destroyed, and this could only be economically done by burning them. If connexions were made along the lines of sewers with gas-destructor lamps, placed at street refuges and at the highest points of the lines, the sewage gas would be drawn out and destroyed, and they would not be far from realising a great desideratum—the purification of sewage in its passage through the conduits. Sewage, however foul when it entered the conduits, would at the outfall be practically innocuous. This method of ventilation would be constant and automatic in its action, and would effect economies in many ways—dispensing with the waste of water in flushing and avoiding the costly use of chemicals. The extraction of the foul gases would cost nothing when gaslight was required, and would only cost 1d. for every 4,000 or 5,000 cubic feet extracted when light was not required. That there was no danger from explosion or other similar cause was proved by the acceptance of the system by the Gas Light and Coke Company of London, after long and severe tests before allowing it to be employed in connexion with their mains.

The usual vote of thanks was accorded to the lecturer by acclamation.

WALTHAM ABBEY.—We have received several interesting letters on the subject of Waltham Abbey, which we shall publish next week.

RECREATION GROUND, HARROGATE. — At the Harrogate Council Chamber on the 3rd inst., Mr. G. W. Willcocks, M.Inst.C.E., held an inquiry relative to the application of the Harrogate Town Council for sanction to borrow 36,500*l.* for the purchase and laying-out of Harlow Moor as a recreation ground. Harlow Moor is situated about a quarter of a mile from the Royal Pump-room, and has been leased to the Corporation by the Earl of Harewood for a number of years. The amount proposed to be purchased is 52 a. 2 r. 20 p., a little more than at present leased. Mr. S. Stead (Borough Surveyor) gave evidence as to the formation of the roads, sewers, &c.

APPLICATIONS UNDER THE 1894 LONDON BUILDING ACT.

AT a recent meeting of the London County Council, the Building Act Committee brought up the following list of applications under the 1894 London Building Act. Those applications to which consent has been given are granted on certain conditions.*

Lines of Frontage.

Clapham.—A mission-room, with a projecting porch, on the north side of Grange-road on a site at the rear of Nos. 24 and 26, Lambourn-road. (Mr. J. F. Evitt for the London City Mission).—Consent.

Chelsea.—A one-story shop upon part of the forecourt of No. 183B, King's-road (Mr. J. E. Arpin for Mr. F. C. Woolmer).—Consent.

Dulwich.—Five houses with projecting bay windows on the north side of Crawthew-grove, Camberwell (Mr. A. E. Mullins for Mr. L. Notley).—Consent.

Hampstead.—A projecting bay window to a house on the north side of Lindfield-gardens, and the retention of a wooden balustrade on the flat roof of the one-story addition to such house (Mr. W. J. Wood for Mr. E. B. Lemon).—Consent.

Kensington, South.—Bay windows and balconies to proposed residential flats on the east side of Queen's-gate (Mr. P. Hoffmann for Mr. H. Bailey).—Consent.

St. Pancras, East.—A porch at No. 228, Camden-road (Mr. J. M. Kennard for Mr. A. Rogerson).—Consent.

Westminster (detached).—An inclosed porch at the entrance to Messrs. Harvey, Nichols & Co.'s premises on the west side of Seville-street, at the corner of Harriet-mews, Knightsbridge (Mr. C. W. Stephens).—Consent.

Kensington, South.—A glass and iron covered way in front of No. 16, Campden-house-road (Messrs. W. T. Allen & Co. for Mr. M. Levy).—Consent.

Hampstead.—Buildings on the north-east side of High-road, Kilburn, to abut also upon Kilburn-priory-road (Mr. A. O. Collard for Captain J. F. Bagot, M.P., and Mr. A. Chudleigh).—Consent.

Hoxton.—A building on the site of five houses, with forecourts, on the east side of Clifton-street, Shoreditch, between Worship-street and No. 9, Holywell-row (Mr. J. E. Saunders for Messrs. Wertheimer, Lea, & Co.).—Consent.

Battersea.—One-story shops on part of the forecourts of Nos. 35 and 36, Broadlands-terrace, Broomwood-road (Mr. J. Stanbury).—Consent.

Greenwich.—A one-story shop on the east side of Woodlands-road, abutting upon Old Dover-road (Mr. A. Huntley).—Consent.

Hammersmith.—One-story shops upon part of the forecourts of Nos. 65, 67, 69, 71, 73 and 75, Goldhawk-road (Mr. W. J. Wood for Messrs. Soley, Willmott & Fletcher).—Consent.

Hampstead.—A one-story library building on the eastern side of Westbere-road, at the corner of Sarre-road (the Vestry of Hampstead).—Consent.

Hampstead.—An iron and glass pent over the entrance to No. 40, Canfield-gardens, to abut upon Fairhazel-gardens (Mr. J. W. Stevens for Mr. B. Groner).—Consent.

Kensington, South.—An open portico at the entrance to No. 18, Cromwell-place (Messrs. Langdale, Hallett, & Co. for Union Bank of London, Limited).—Consent.

Lewisham.—Houses, with shops, upon the site of Nos. 141 and 143, Rushey-green, Catford (Mr. A. L. Guy for Mrs. Atkins).—Consent.

Lewisham.—A house, with a shop, on the north side of Ladywell-road, at the corner of Algernon-road (Mr. A. Roberts).—Consent.

Lewisham.—A one-story school building and a cookery and laundry centre on the east side of Brockley-rise, at the corner of Brockley-park (Mr. T. J. Bailey for School Board for London).—Consent.

Paddington South.—An open portico at the entrance to No. 35, Cambridge-street (Mr. A. R. Stenning for Lloyd's Banking Company).—Consent.

St. George, Hanover-square.—The inclosure of the sides and front of the portico at No. 47, Brook-street (Messrs. G. Trollope & Sons for Lady Delamere).—Consent.

St. George, Hanover-square.—A balcony at the first floor level in front of Love's Hotel, Nos. 35 and 36, Albemarle-street, Piccadilly (Mr. C. Sewell for Mr. R. Ball).—Consent.

Deptford.—One-story shops upon part of the forecourts of Nos. 190, 192, 194, 196, and 198, Trundley's-road and No. 1, Sanford-street (Mr. A. E. Symes for Mr. J. Beck).—Refused.

Strand.†—Three bay windows and an angle turret to a proposed addition to the Princes Restaurant on the site of Nos. 36, 37, and 38, Jermyn-street, St. James's (Messrs. J. T. Wimperis & Arber for the Princes-hall Restaurant, Limited).—Refused.

Marylebone, East.—A wood and iron projecting sign in front of No. 16, Great Marylebone-street. (Mr. W. D. Caroë for Mr. T. Foakes).—Refused.

Bow and Bromley.—A house, with a shop, on the east side of Wansbeck-road, Hackney-wick, adjoining No. 54, and abutting upon Allanmouth-road. (Mr. F. W. Rogers).—Refused.

* Names of applicants are given in brackets. Buildings are new erections unless otherwise stated.

Dulwich. — Buildings with bay windows on the west side of Grove-lane and south side of Champion-park, on the site of No. 1, Champion-park and grounds. (Mr. A. Blackford for Mr. T. Freeman).—Refused.

Fulham.—One-story shops upon the forecourts of Nos. 663, 665, and 667, Fulham-road. (Mr. D. Matthews for Mr. F. W. Potter).—Refused.

Hackney, Central.—That Mr. A. Bedborough be informed that his application on behalf of Mr. W. Andrews for the consent to the erection of two blocks of residential flats with shops, on the west side of Lower Clapton-road, between Holly-lodge and Maitland-house, having been further considered, the Council has resolved to adhere to the decision of February 28, 1898, upon the application.—Agreed.

Kensington, South.—A block of buildings with projecting bay windows, &c., at Hyde-park-gate, on the south side of Kensington-road, to abut also upon Palace-gate. (Mr. B. Hosegood).—Refused.

Lewisham.—That Mr. J. Stanford be informed that the Council is not prepared to further modify, by the omission of the words "for the use of the public," its consent of February 22, 1898, as modified by the resolution of March 29, 1898, to the erection of five houses with one-story shops on the west side of Hither-green-lane, next a house known as The Laurels.—Agreed.

Lewisham.†—Three houses with one-story shops, on the south side of Honor Oak Park, between Stondon Park and Brockley-rise, and a house with a one-story shop on the east side of Stondon Park to abut on Brockley-rise (Mr. A. Roberts for Mr. R. Soper).—Refused.

St. George, Hanover-square.†—That Mr. T. J. Gawthorp be informed that his application on behalf of Messrs. Thomas & Son for consent to the erection of a glass and iron pent at the entrance to No. 32, Brook-street, to abut upon South Molton-street, having been further considered, the Council sees no reason to depart from its decision of March 29, 1898, not to grant the application.—Agreed.

Strand.—Iron and glass oriel windows and balconies on the first floor level of two warehouses to be erected on the site of Nos. 3, 4, and 5, Denman-street, St. James's (Messrs. D. Cubitt Nicholls, Sons, & Chuter for Mr. W. F. Lobb-Williams).—Refused.

Battersea.—A one-story building erected in the garden at the rear of No. 75, Falcon-road, and abutting upon Falcon-grove (Mr. J. Chapman).—Refused.

Greenwich.—A block of six houses, two of which are shown to flank upon Mauritius-road and Azof-street respectively (Mr. W. C. Jones for Mr. J. Vavasseur).—Refused.

Lewisham.—Six houses with bay windows on the north side of Blythe-hill, Catford (Mr. J. W. Webb).—Refused.

Marylebone, West.—A one-story shop front to No. 1, Duke-street, Manchester-square (Messrs. Howgate, Leeds, & Keith for Mr. G. Coulthurst).—Refused.

Width of Way.

Hackney, North.—A building on the west side of Birkbeck-road, Dalston (Mr. L. Solomon for Messrs. Blundell & Co.).—Consent.

Rotherhithe.—Variation from the plan sanctioned on March 9, 1897, for the erection of an addition to the flank of the "King's Arms" public-house, No. 251, Tooley-street, to abut upon Three Colt-lane, St. Olave, Southwark (Messrs. Eedle & Meyers for Mr. J. T. Holt).—Consent.

Limehouse.—A one-story building to abut upon Wapping Dock-street and Cinnamon-street respectively (Messrs. E. N. Clifton, Son, & Hope for Mr. H. Lafone).—Consent.

City of London. — The Sir John Cass Technical Institute, on the east side of Jewry-street, to abut also upon George-street and Little George-street. (Mr. A. W. Cooksey for the Governors of the Sir John Cass Foundation).—Consent.

Limehouse.—A two-story cottage on the east side of School-house-lane, Broad-street, Ratcliff. (Mr. H. O. Ellis for Messrs. C. Poulter, Limited.).—Consent.

St. Pancras, East.—A one-story workshop at the rear of Nos. 12 and 13, Rochester-terrace, Camden Town, abutting upon Rochester-place. (Mr. J. M. Kennard for Mr. P. Wilson).—Consent.

Limehouse.—Two warehouses on the site of No. 75, Wapping-wall. (Mr. E. A. B. Crockett for Messrs. Anderson, Weber, & Smith.).—Refused.

Southwark, West.—A stable on the north side of Orange-street (Mr. E. Carritt for Mr. J. Sainsbury).—Refused.

Kensington, South.—A building on part of the gardens at the rear of Nos. 32, 34, 36, and 38, Abingdon-road, to abut upon Sutton-street and Park-terrace (Messrs. Goodwyn & Sons for Mr. T. Parker).—Refused.

Open Spaces about Buildings.

Chelsea.—That the Council do, in the exercise of its powers under sec. 41 of the London Building Act, 1894, allow a modification of the provisions of that section with regard to open spaces about buildings, so far as relates to the proposed erection of a block of six-story residential flats, with shops on the ground floor, on the west side of Basil-street, Brompton-road, at the corner of New-street, with an open space in the rear not in conformity with the provisions of the Act, and that the sanction o the Council be given to a modification of the provisions of Part V. of the Act with regard to the extension above the diagonal line as directed to be drawn, so far as relates to the said building (Mr. C. W. Stephens for Harrod's Stores, Limited).—Agreed.

Fulham.—That the Council do, under Section 41 of the London Building Act, 1894, allow the erection of Nos. 4, 5, 6, 7, 8, 9, 10, 11, and 12, The Crescent, North End-road, at the corner of Lillie-road, with an open space at the rear of each building (Mr. W. A. Large for Messrs. Jones Brothers).—Agreed.

Deviation from Certified Plans.

Finsbury, Central.—Certain deviations from the plan certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding of the "London Spa" public-house and the Northampton estate audit rooms, No. 70, Exmouth-street, Clerkenwell, at the corner of Rosoman-street (Mr. W. A. Aickman and Mr. J. K. Bateman for Mr. H. H. Finch).—Consent.

Lambeth, North.—Certain deviations from the plans certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding of the "Spanish Patriots" public-house, No. 34, Lower-marsh, Lambeth (Mr. J. W. Brooker for Mr. Gilbert).—Consent.

Finsbury, Central.—A building on a portion of the open space at the rear of the "London Spa" public-house and Northampton Estate Audit Rooms, No. 70, Exmouth-street, Clerkenwell, at the corner of Rosoman-street (Messrs. W. A. Aickman and J. K. Bateman for Mr. H. H. Finch).—Consent.

Line of Fronts and Width of Way.

Deptford.—One-story shops upon part of the forecourts of Nos. 253A, 255A, 257, 259, and 261, New Cross-road (Mr. G. A. Wilson for Mr. R. Farnan).—Consent.

Finsbury, Central.—A one-story shop addition to, and the setting back of the upper part of, the present two-story building at No. 2A, Hermes-street, Pentonville (Mr. T. H. Watson for Captain F. T. Penton).—Consent.

Peckham.—That the consent of the Council of April 5, 1898, to the erection of a building on the north side of Elm-grove, Rye-lane, Peckham (Mr. P. Moses for Mr. S. Sayer), be modified by the substitution of the words "22 ft." for the words "16 ft."—Agreed.

Rotherhithe.—That the application of Messrs. Barnes-Williams, Ford, & Griffin for Messrs. France & Co., Limited, for an extension of the period within which the erection of a portion of a warehouse on the south side of Pickle-herring-street, Horsleydown, the erection of two open iron bridges across Pickle-herring-street, the erection of a building to a give-and-take line on the west side of Vine-street and the widening of a portion of Stoney-street, were required to be completed, be granted.—Agreed.

Fulham.—Additions to Nos. 182 and 184, New King's-road, to abut on that road and also on Fulham Park-gardens (Mr. A. E. Chasemore for Mr. T. H. Sheen).—Refused.

Kensington, South.—A one-story shop on part of the fore-court of Jasper House, Earl's Court-road (Messrs. J. W. Morley & Letts for Mr. J. Buckle).—Refused.

Peckham.—One-story shops in front of Nos. 571 and 573, Old Kent-road, Camberwell (Mr. E. J. Strevens for Mr. T. Wade).—Refused.

Strand.—Rebuilding of the "Globe" public-house, No. 58, New Compton-street, with an oriel window at the first, second, and third floor levels, and the ground story advanced (Mr. T. W. Moss for the Winchester Brewery Company, Limited).—Refused.

Formation of Streets.

Clapham.—That an order be sealed and issued to Mr. J. Stanbury, sanctioning the formation or laying out of two new streets for carriage traffic on the Beechwood Estate, West Side, Clapham Common, and the formation on the estate of a short length of street, 40 ft. wide, next the common. That the names Culmstock-street and Winsham-street be approved for the new streets.—Agreed.

Dulwich.—That an order be sealed and issued to Mr. J. W. Brooker sanctioning the formation or laying out of a new street, for carriage traffic, to lead out of Elsie-road into Grove-vale, Goose-green (for Mr. W. H. Thompson).—Agreed.

Woolwich.—That an order be sealed and issued to Messrs. Church, Quick & Whincop, sanctioning the formation or laying out of a new street, for carriage traffic, to lead out of Wickham-lane, Plumstead. That the name Proctor-street be approved for the new street.—Agreed.

Norwood.—That an order be sealed and issued to Mr. L. P. Hodge, sanctioning the formation or laying out of a new street, for carriage traffic, to lead from Knight's Hill-road into High-street (for Mr. P. Stock).—Agreed.

Wandsworth.—That an order be sealed and issued to Mr. L. S. Rogers sanctioning the formation or laying out of a new street for carriage traffic, to lead from Balham Hill into Cavendish-road, Clapham. That the name Yukon-road be approved for the new street (for Mr. J. Jenkins).—Agreed.

St. Pancras, North.—That Messrs. Boehmer & Gibbs be informed that their application on behalf of Mr. A. W. Armstrong for the Council's sanction to the formation or laying-out for carriage traffic of a new street to lead out to the west side of Highgate-road, the surrender of a portion of the estate for the formation of a street on the east side of Parliament Hill, and the dedication to the use of the public of certain land, no reason is seen why the Council should depart from its decision of February 8 last, not to grant the application.—Agreed.

Hammersmith.—That an order be sealed and issued to Mr. J. H. Hayes refusing to sanction the formation or laying out for carriage traffic of a new street, 40 ft. wide, to lead out of the north side of King-street West.—Agreed.

Clapham.—That an order be sealed and issued to Messrs. H. Wakeford & Sons sanctioning the formation or laying out of three new streets, for carriage traffic, to lead out of the east side of Manor-street, High-street (for Mr. C. G. St. John). That the names Elmhurst-street, Voltaire-street, and Balzac-street be approved for the new streets.—Agreed.

Clapham.—That an order be sealed and issued to Messrs. Lee & Pain, sanctioning the formation or laying out of two new streets, for carriage traffic, to lead out of the south side of Poynder's-road, Cavendish-road (for Sir J. Dickson-Poynder, Bart., M.P.). That the names Honeybrook-road and Rudloe-road be approved for the new streets.—Agreed.

Wandsworth and Clapham.—That an order be sealed and issued to Mr. A. C. Pillar sanctioning the formation or laying out of a new street, for carriage traffic, between Grove-road and Hydethorpe-road. That the name Radbourne-road (in continuation) be approved for the new street.—Agreed.

Wandsworth.—That an order be sealed and issued to Mr. A. K. Stephens, sanctioning the formation or laying out of two new streets, for carriage traffic, between Mitcham-road and Bickersteth-road, Lower Tooting (for Messrs. Robertson & Barrie). That the names Glasford-street and Renmuir-street be approved for the new streets.—Agreed.

Wandsworth.—That an order be sealed and issued to Mr. R. C. T. Gordon, sanctioning the formation or laying out of two new streets, for carriage traffic, to lead out of the west side of Garratt-lane, and the widening of that lane and Trewint-street, on the Garratt Park estate, Earlsfield. That the names Steerforth-street and Thorndean-street be approved for the new streets.—Agreed.

Wandsworth.—That an order be sealed and issued to Mr. A. Welling, sanctioning the formation or laying out of new streets, for carriage traffic, on the east side of Garratt-lane and south side of Swaffield-road, Earlsfield, and the widening of portions of Garratt-lane. That the names Wilna-road (in continuation), Atheldene-road, and Farlton-street be approved for the new streets.—Agreed.

Wandsworth.—That an order be sealed and issued to Mr. A. Wellings, refusing to sanction the formation or laying out, for carriage traffic of new streets, 40 ft. wide, on the east side of Garratt-lane and south side of Swaffield-road, Earlsfield.—Agreed.

Wandsworth.—That an order be sealed and issued to Mr. P. E. Pilditch, refusing to sanction the formation or laying out, for carriage traffic, of a mews varying in width from 16 ft. to 20 ft. to lead out of the west side of Heathview-gardens, Portsmouth-road, Putney.—Agreed.

Artisans' Dwellings.

Hampstead.—That the Council do, in the exercise of its powers under section 42 of the London Building Act, 1894, disapprove and refuse to sanction the plans, delivered by Mr. J. Emblin-Walker for Mr. W. H. Watts, of a block of dwellings not abutting upon a street and adapted to be inhabited by persons of the working class, on the west side of a yard leading out of Church-lane, adjoining the grounds of the Sailors' Daughters' Home.—Agreed.

Islington, North.—That the Council do, in the exercise of it powers under section 42 of the London Building Act, 1894, disapprove and refuse to sanction the plans, delivered by Mr. W. R. Laurence for Mr. C. Gillatt, of two blocks of dwelling-houses not abutting upon a street, and adapted to be inhabited by persons of the working class, at the rear of Nos. 293, 295, 297, 299, 301, 303, 305, 307, 309, 311, 313, and 315, Hornsey-road, with a gateway entrance approach, 12 ft. wide, between Nos. 303 and 305.—Agreed.

Space at Rear.

Wandsworth.—That the Council do, in the exercise of its powers under Section 41 (1) (vi.) of the London Building Act, 1894, allow a modification of the provisions of that section with regard to open spaces about buildings, so far as relates to the proposed erection of a two-storey dwelling-house on the east side of Bangalore-street, Putney, with an irregular space at the rear. (Mr. W. H. Rackett).—Agreed.

Buildings for the Supply of Electricity.

Lambeth, North.—That the Council do approve of the plans submitted with the application of Mr. W. B. Pinhey for Charing Cross and Strand Electricity Supply Corporation, Limited, for the construction of a proposed extension of the company's generating station and works at No. 85, Commercial-road.—Agreed.

Newington, West.—That the Council, in the exercise of its powers under Sections 13, 22, and 203 of the London Building Act, 1894, do approve of the plans submitted with the application of Messrs. Kincaid, Waller, & Manville for the Vestry of St. Mary, Newington, for the construction of an electricity generating station and works on the

north side of Penrose-street, Walworth, on the site of Nos. 20 to 34.—Agreed.

Southwark, West.—That the Council do approve the plans submitted with the application of Mr. F. Bailey for the City of London Electric Lighting Company, Limited, for the construction of additions to the Company's generating station and works on the south side of Bankside.—Agreed.

Dwelling-houses on Low-lying Lands.—Part XI.

Woolwich.—That the solicitor do prepare a licence under section 122 of the London Building Act, 1894, to Mr. T. P. White for the erection of two dwelling-houses on low-lying land situated on the north side of Bostall-lane, Plumstead.—Consent.

The recommendations marked † are contrary to the views of the Local Authorities.

BOOKS RECEIVED.

THE MUNICIPAL AND SANITARY ENGINEERS' HANDBOOK.—By H. Percy Boulnois. Third edition. (E. & F. N. Spon.)

WORKING MEN'S INSURANCE.—By W. F. Willoughby. (T. Y. Crowell & Co.; New York.)

STREET-CLEANING AND ITS EFFECTS.—By G. E. Waring, Jun. (Gay & Bird.)

PARTY STRUCTURES. — By Sydney Perks. (St. Bride's Press.)

COTTON FIRES AND COTTON BALES.—By R. H. Scotter. (C. & E. Layton.)

WORKSHOP MAKESHIFTS.—By Hans J. S. Cassal. (L. Upcott Gill.)

A GUIDE TO THE GUILDHALL. — (Simpkin Marshall & Co.)

INDUSTRIAL ELECTRICITY.—Edited by A. G. Elliott. (Whittaker & Co.)

THE MANUFACTURE OF GLAZED BRICKS AND GLAZED SANITARY WARE. By H. Ansell. Second Edition. (H. Greville Montgomery.)

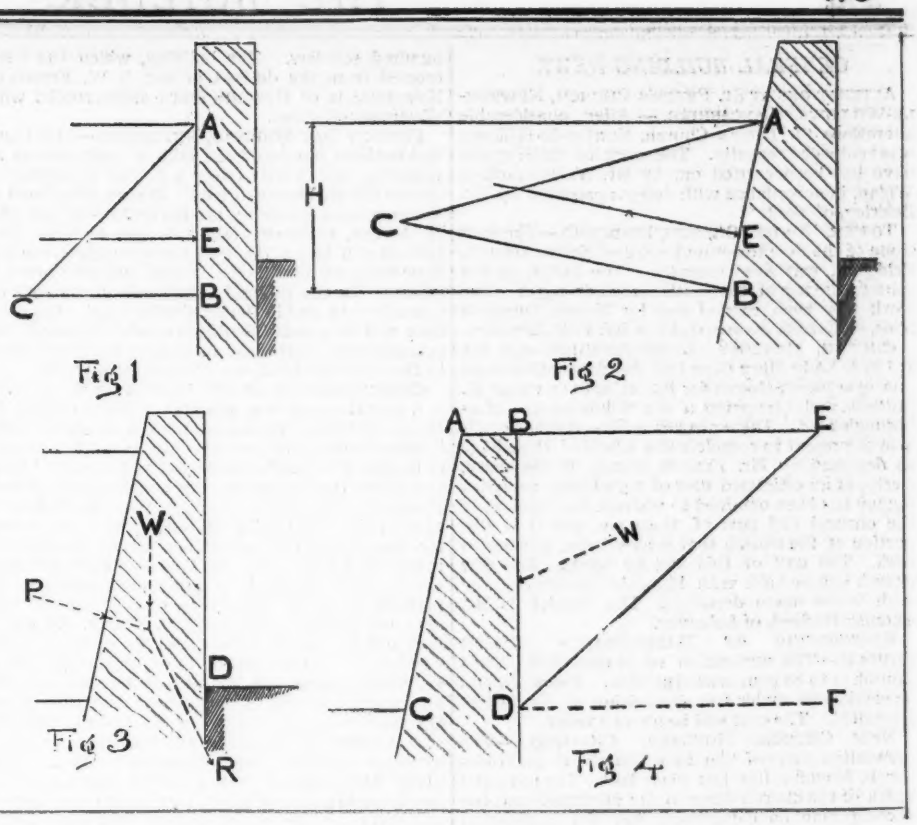
The Student's Column.

THE CALCULATION OF STRENGTH OF MATERIALS AND RESISTANCES.—XX.

RETAINING walls are walls which are built for the purpose of supporting a more or less moveable body behind them, which may be water or earth of various kinds. If the earth or rock is of such a nature as to be able to support itself with a vertical face, and needs only protection against attacks of the weather, the wall is then called a face wall or breast wall. Thus, the retaining wall has to resist a pressure behind it, but the breast wall presumably has only its own weight to carry.

In the case of retaining walls, therefore, we have to consider what effect the pressure of the earth or water behind the wall has on its stability. The force exerted upon the back surface of the wall is clearly one tending to overturn the wall about its base, and the manner in which this force acts is not quite the same in the case of earth and water.

Architects do not often have to deal with retaining walls intended to support a weight of water except of small depth, as in the case of swimming baths, but as the investigation of the overturning effect of still water on the back of a retaining wall is simple, we shall do well to commence our study with that problem. And we will take, first of all, the case of a retaining wall with vertical back. The pressure of the water upon this vertical surface is, in accordance with the laws of hydrostatics, at right-angles to the surface exposed to the pressure, and directly proportional to the depth below the surface. If we suppose in Fig. 1 that A B represents the height of the water at the back of a retaining wall, then, as the pressure varies directly as the depth of the water, it is clearly greatest at the point B, and gradually diminishes to nothing at point A. If we represent the pressure at point B by a line drawn to scale B C, equal to the depth of the water A B, and join C A, we shall have the triangle A B C, representing the total pressure on any line at the back of the wall. And by measuring the perpendicular distances on A B to A C, we shall have the pressure at any point in the height of the wall proportionate and on the same scale as we originally drew B C. The resultant, therefore, of these varying pressures of the water at various depths will pass through the centre of gravity of triangle A B C, which, as we know, is one-third the distance from the base B C to A, that is, one-third of the height from B to A, where we have the point E in our figure. The pressure, therefore, on the back of the wall is the area of the triangle A B C multiplied by the



length of the wall. The area of our triangle A B C is

$$A B \times \frac{B C}{2},$$

and as water weighs 62½ lb. per cubic foot, the pressure on one foot run of the wall is

$$A B \times \frac{B C}{2} \times 62\tfrac{1}{2},$$

Calling the pressure P we have

$$P = 62\tfrac{1}{2} \times \frac{A B \times B C}{2}$$

$$= \frac{62\tfrac{1}{2}\ A B^2}{2} = \frac{62\tfrac{1}{2}\ H^2}{2},$$

where H is the depth of the water.

If the face of the wall towards the water is not vertical, but battered, the pressure is no longer horizontal, but, as we have above stated, at right angles to the surface of the wall. We should therefore have the arrangement as in fig. 2, where the maximum pressure is at the bottom of the wall, at the point D, but at right angles to A B, and we should therefore draw the triangle A B C, with B C equal to H, the depth of the water, and at right angles to A B. As before, the point of action of the resultant of the varying pressures will be E, and its direction passing through the centre of gravity of the triangle, E D is therefore, one-third of A B. The pressure on each foot run of the wall will be, as before, the area of the right-angled triangle A B C multiplied by 62½ lbs.—*i.e.*:—

$$P = \frac{62\tfrac{1}{2} \times A B \times B C}{2} = \frac{62\tfrac{1}{2}\ A B \times H}{2}.$$

Thus we see that, in any case, whatever be the angle of the wall towards the water, the pressure is on each foot in the length of the wall, 62½ lb. multiplied by the product of the height of the exposed face A B and the depth of the water, whilst the point of application is one-third of the height of the wall from the bottom of the water, and the direction of the pressure of the water is at right angles to the face of the wall.

Knowing these data about the pressure of the water, we can then estimate the stability of the wall to resist that pressure. The force by which the wall opposes the overturning tendency of the pressure of the water is its own weight, which necessarily acts vertically downwards through the centre of gravity of the wall. And if, as in fig. 3, we draw the direction P of the pressure of the water and W the direction of the weight of the wall, we can then find by the parallelogram, or triangle of forces, their resultant R, and the direction of that resultant will inform us as to whether the wall is sufficiently strong to resist the pressure of the water or not. When the direction of R passes through the point D, the bottom of the external face of the wall, the pressure is just on the point of overturning the wall. As in the case of our investigation of the stability and line of pressure of an arch, so in the case of a retaining wall, especially one intended to support a body of water, a margin must be allowed, and the direction of the resultant R should pass the horizontal line through D not nearer than one-third of the thickness of the wall at its base, that is, the horizontal line through D.

The designing of retaining walls to support a mass of earth is not by any means so simple as in the case where water is to be the material supported. In the case of earth there is always some angle at which it will form a sloping bank without extraneous support other than that it receives from the soil at the foot of the bank, except in those cases where the earth is mixed with so much water as to be practically fluid, a state of things that may exist in the case of liquid mud or quicksand. The angle at which earth will form a bank varies with its composition, its thickness or solidity, and its dryness or dampness. It is a matter of common observation that after more or less prolonged wet weather banks of earth frequently slip and take up a lower angle than that at which they were originally made.

The angle at which a mass of earth will remain without movement is called its natural slope or angle of repose, and as long as the earth has its surface formed into a bank not exceeding that angle it needs no retaining wall. If, however, we desire to support the earth at a greater angle than its own slope or angle of repose some extraneous support must be given to it, and to afford this extraneous support is the object in general of retaining walls. The load which such retaining wall has, therefore, to support is that of the superincumbent mass of earth above the natural slope or angle of repose. And if we imagine, as in fig. 4, a retaining wall A B C D, the weight of earth which that wall will have to support will be the weight of the triangle B D E, E D making an angle E D F with the horizon equal to the angle of repose, E D being the natural slope of the earth in any particular case. The force, therefore, which is tending to overturn the wall is that which may be represented by the dotted line and arrow W, being the effect of the weight of the superincumbent mass of earth tending to slide along the slope D E.

ALTERATIONS, BLACKBURN EXCHANGE.—Certain alterations are to be carried out for the improvement of the Blackburn Exchange. The alterations consist of the removal of the present stage, and building in its place a gallery capable of holding about 350 people. The new stage will be built at the King William-street end, and will communicate by means of a bridge with one of the rooms belonging to the present Assembly Rooms, which will form a retiring or ante-room. Messrs. Marshall & Dent are the contractors, and the work is to be carried out under the superintendence of Mr. James Bertwistle, architect.

GENERAL BUILDING NEWS.

ALTERATIONS AT ST. PETER'S CHURCH, NEWTON-LE-WILLOWS, LANCASHIRE. — After considerable alterations St. Peter's Church, Newton-le-Willows, was re-opened recently. The work of building the nave has been carried out by Mr. W. Winnard, of Wigan, in accordance with designs prepared by Mr. Brierley, of York.

TOWER, NOLTON CHURCH, BRIDGEND.—The apex stone of the new tower and spire of Nolton Church, Bridgend, was fixed recently. The height of the spire to the top of the weathercock is 143 ft. The work has been carried out by Messrs. Turner & Sons, of Cardiff, from designs by Mr. F. R. Kempson.

CHURCH, HUNCOTE, LEICESTERSHIRE.—On the 3rd inst. Lady Mary Glyn laid the foundation-stone of a new parish church for Huncote, to be called St. James's, and occupying a site adjoining the Narborough-road. There are not sufficient funds available at present to complete the whole of the edifice as designed by Mr. Francis Bacon, of Newbury, Berks, at an estimated cost of 2,500*l.*, but sufficient money has been obtained to warrant the building of the chancel and part of the nave, and it is this portion of the church that is now being proceeded with. The cost of this will be 1,525*l.* The new church will be built with Huncote granite, relieved with white stone dressings. The builder is Mr. Thomas Herbert, of Leicester.

RESTORATION OF MACCLESFIELD PARISH CHURCH.—The restoration of Macclesfield Parish Church is to be commenced at once. The work will be carried out under the supervision of Sir Arthur Blomfield. The cost will be about 17,000*l.*

NEW CHURCH, HOYLAKE, CHESHIRE. — The foundation stone of the new Church of St. Hildeburgh, Hoylake, has just been laid. The nave and aisles of the church have so far advanced that the roofing may be commenced, but the foundation stone was laid in the chancel, which has only just been started. The architect is Mr. Edmund Kirby. The building is built of Ruabon brick, and the windows, which are wrought in terra-cotta, are purposely designed to suit subjects for stained glass. The cost of the church will be about 6,000*l.*, and it will provide accommodation for some 500 people. The clerk of works is Mr. Kay.

BAPTIST CHURCH, KING'S HEATH, WORCESTERSHIRE.—The opening services of the new Baptist church at King's Heath took place a few days ago. The new church is 72 ft. long by 43 ft. wide, and will accommodate about 500 persons. The materials used are Leicestershire bricks, with Hollington stone dressings. Internally the church has an open timber roof of pitch pine. The floor is on an inclined plane. Vestries are provided for the minister, deacons, and the choir, and there is also a ladies' room. The work has been carried out by Messrs. James Moffat & Sons, from the designs and under the superintendence of the architect, Mr. A. Harrison, of Birmingham.

METHODIST CHURCH, CARLTON, NOTTINGHAM.—A new building for the United Methodist Free Church Persuasion has just been opened at Carlton. The church is capable of seating 450 persons, and in addition there is a school adjoining, which, with the class-rooms, affords accommodation for about 300. Messrs. R. C. and E. R. Sutton were the architects. The principal entrance to the church is from the Main-street, and to the schools from Cromwell-street. The facings are of red sand brick with stone dressings. The contract for the buildings was let to Mr. John Lewin.

WESLEYAN CHURCH, CARDIFF.—A new Wesleyan church has just been opened at Clare-gardens, Riverside, Cardiff. The building has been carried out by Messrs. Cox & Bawr, from the plans of Messrs. Habershon & Fawckner, at a cost of about 2,800*l.* Accommodation is provided for about 700 persons, and the church is capable of further enlargement when found necessary.

SCHOOLS, ABERDEEN. — The Aberdeen School Board are about to erect a new school at Old Aberdeen, in Dunbar-street. The building will be a granite structure, with Kemnay stone dressings, and two stories in height. The architect is Mr. J. A. Ogg Allan. The cost is estimated at about 5,500*l.*

SCHOOL, GREENOCK. — Ardgowan new school, Greenock, was opened recently. The new edifice, which occupies a site at the corner of Brisbane, Nelson, and Tennant streets, is a building of three stories. The ground floor of the school is taken up with class-rooms for the Oral School for deaf mutes, teachers' rooms, janitor's apartments, covered playground for girls, cloak-rooms, &c. The first floor has five class-rooms, and the flat above seven class-rooms. Altogether the school affords accommodation for 1,100 scholars. Mr. James B. Stewart, Greenock, was the architect.

BOARD SCHOOLS, HARTLEPOOL. — The new schools erected by the Hartlepool School Board on the Gulley's Field site were opened on the 3rd inst. The buildings have been erected at a cost of about 6,000*l.*, from plans prepared by Mr. James M. Bottomley, architect, of Middlesbrough, and are to accommodate 250 boys and 250 girls of the higher standards only.

WESLEYAN SCHOOLS, FELLING, DURHAM.—The new Wesleyan schools at Felling have just been opened. The schools, which are situated at Holly Hill, are capable of seating from three to four hundred scholars. The building, which has been erected from the designs of Mr. J. W. Frazer, of Newcastle, is of Heworth Burn stone, roofed with Westmorland slates.

CHURCH DAY SCHOOLS, KETTERING.—The foundation-stone has just been laid of new schools at Kettering, which are to form a part of the organisation of the St. Mary's district. Messrs. Blackwell & Thompson, of Kettering, are the architects, and Mr. H. Martin, of Northampton, is the builder. The schools will be on the two story principle, the top floor being used for a girls' school, and the lower for infants. In the infants' department there will be room for 350, and in the girls' school 358. On each floor will be a central hall, and provision is made for extending the floor space by adding the class-rooms to the main hall by means of removable partitions.

CONSUMPTION HOSPITAL, BRIDGE OF WEIR, N.B. —A new Consumption Hospital is being erected at Bridge of Weir. The centre portion of the building is three stories, and the flanking portions two stories in height. The public entrance is at the rear. There is a porch, through which the vestibule is entered. From this a corridor is reached, 7 ft. 3 in. wide and 110 ft. long. To the left of the corridor are rooms for the plunge and inhalation baths. Lavatories adjoin the bath-rooms. On this floor there are nine wards, each made to accommodate one or two patients at most. The walls, rounded at the corners, are covered with hygienic plaster. In corridors and wards alike the floors are of pitch pine, varnished. At each end of the corridor there is a ward for two patients. An attendant's room, a room for napery, and a laboratory are on the same floor. On the first floor area are a dining-hall, 30 ft. by 20 ft., nine wards and single apartments for patients, matron's bedroom, and attendant's room. The upper floor, which is in the central portion of the block, contains the kitchen, two rooms for nurses, and two rooms for convalescents. The walls of the staircase leading to the basement are covered with enamelled brick or tile. The executive buildings are situated in a range of houses occupying a site 120 ft. by 96 ft. over the rising ground behind the hospital. The whole suit of baths—Turkish, Russian, wash-room, inhalation-room, tepidarium, soil bath, and sun bath—are connected with this place, as well as with a laundry and a mortuary. Adjoining these, to the east, there is a residence for the workers. The contractors are—George Barlas & Co., masons; William Forbes, plasterer; and Matthew Henderson, joiner. Mr. R. A. Bryden is the architect.

PUBLIC BATHS, ALLOA, N.B.—New public baths have just been erected at Alloa. The building contains the following departments, viz. :—Billiard and amusement rooms, swimming pond and accessories, first and second-class plunge-baths, Turkish baths, Russian bath, and gymnasium. On the ground floor, and immediately on each side of the main entrance, are the billiard and amusement rooms, and beyond the entrances to these rooms is the booking and towel office. A wide corridor in front of this office gives access to the other departments of the building. The swimming-pond hall, extending from this corridor through a vestibule, is 98 ft. by 50 ft., having an open timber roof averaging 25 ft. high from the floor. The pond is 75 ft. by 32 ft. On each side are dressing-boxes. A dressing-room and washing-room for school children are provided at the entrance end, and a washing-room for adults, with the usual conveniences, is situated close to the club-room. The second-class plunge-baths—seven in number, on a slightly lower level than the pond—are entered from the main corridor. The first-class baths are on an entresol floor immediately over the booking office, and are reached from the same corridor by a stair. The Turkish bath department, and the Russian bath adjoining, are at the far end of the swimming-pond. The gymnasium 76 ft. by 28 ft., having an open timber roof, with an average height of 22 ft., occupies the whole of the first floor of the front building, over the billiard and amusement rooms, and is provided with the necessary dressing-rooms. A gallery is placed at the one end. The washing-house and laundry are placed behind the heating department. All the rooms have been fitted with lamps for electric lighting; this work has been carried out by Messrs. Mavor & Coulson, Limited, Glasgow. Messrs. Burnet, Son, & Campbell, of Glasgow, were the architects.

MASONIC TEMPLE, TORQUAY.—A new masonic temple is being erected at Torquay. The building will be Gothic in style, and mainly of red sandstone, with Bath stone dressings. On the ground floor will be a dining hall 38 ft. by 23 ft., an entrance hall 9 ft. by 15 ft., a kitchen 18 ft. by 14 ft., pantry and offices. Above will be the main hall, 24 ft. by 23 ft., a reception-room 18 ft. by 14 ft., a small ante-room, steward's store, &c. Messrs. Bridgman are the architects, and Mr. S. Hawkins the builder.

ORGAN CHAMBER, FAULS, SALOP.—On the 30th ult. the foundation stone was laid of a new organ chamber, to be erected on the west side of the little church at Fauls, in memory of the late Rowland Clegg, 3rd Viscount Hill. Mr. B. Edmund Ferrey, of London, the architect of the church, was also engaged on the present occasion, and the builder was Mr. G. Dodd, Whitchurch.

PALACE THEATRE, BLACKBURN.—This theatre, which is shortly to be erected on the site at the corner of Jubilee-street, Bridge-street, and Dandy-walk, opposite the railway station, will be constructed externally of Yorkshire stone dressings and Accrington red bricks. Seating accommodation will be provided for about 2,500 persons. The principal entrance will be from the Esplanade in Bridge-street, and side entrances and exits are to be provided in both Dandy-walk and Jubilee-street. On the ground floor level will be the stalls, approached from the main entrance, and a raised amphitheatre-shaped pit. The first circle will also be reached from the entrance hall, and on this level will be boxes, some next to the proscenium, and a range of others directly facing the stage, placed on the higher level of the first circle. Above this will be the gallery. The theatre throughout will be lighted by electric light. The architects are Messrs. J. T. Wimperis & Arber, London.

BUSINESS PREMISES, NEWCASTLE.—On the 2nd inst. a new furnishing warehouse was opened for Messrs. S. Kipsey & Co., at 50 and 52, Northumberland-street, Newcastle. Steel has been largely used in the construction of the building. The architect of the new premises was Mr. W. Lister Newcombe, the contractor was Mr. James Lunn, the steelwork was executed by Messrs. Somerset & Co., the plumbing by Mr. Robert Herron, the painting by Mr. Neil, the plastering by Messrs. Edward Tubb & Son, and the fittings by Mr. James Smart.

BUSINESS PREMISES, PERTH.—A new block of buildings is to be erected by Messrs. W. B. & J. B. Deas at the corner of County-place and New-row, Perth. The building consists of three stories besides the ground floor, the latter being devoted wholly to shops and offices. Mr. G. P. K. Young is the architect.

TOWN HALL, ENNISKILLEN.—The foundation stone of the new Town Hall at Enniskillen has just been laid. The contractor is Mr. James Harvey, Messrs. Anthony Scott & Son, Drogheda, being the architects.

ALMSHOUSES, TAUNTON ST. JAMES, SOMERSETSHIRE.—The new almshouses erected for the parish of Taunton St. James are now completed. The new houses are situated a little way back from St. James's-street, on land adjoining the disused churchyard. The houses provide accommodation for six married couples or single persons, as the case may be, and they are arranged in pairs. The living rooms are in each case on the ground floor, and the bedrooms of each pair are approached by a common staircase. The living rooms are 12 ft. by 10 ft., and the bedrooms are about the same size. The houses are built of red Bridgwater bricks and are roofed with dun-coloured tiles. The bricks are relieved by string courses of Bath stone. To each pair of houses is a porch, and the windows are glazed with diamond panes. The architect was Mr. J. Houghton Spencer, Taunton. The contractor was Mr. T. H. Moggridge. The amount of the contract was 1,116*l.*

STAR HALL INSTITUTE EXTENSIONS, FINEDON, NORTHAMPTONSHIRE.—The large new hall adjoining the Star Hall Institute, Finedon, has just been opened. This building, which is 60 ft. by 38 ft., adjoins the old premises; it will accommodate nearly 500 people. Messrs. Mosley & Anderson, of Northampton, were the architects. Mr. A. J. Ball was the builder.

HOME, EDINBURGH INDUSTRIAL BRIGADE.—A new Home is in course of erection for the Edinburgh Industrial Brigade. On the Fountainbridge and Ponson-street frontage the building will consist of four stories and a basement, and towards Thornybank there will be three stories. The Fountainbridge frontage will have several shops. The House will occupy an area of about 815 yards, and will be built round an open court. On the first floor a Directors' and ladies' room, as also a reading and play room for the boys, will be placed. On the second floor there will be the Senior Superintendent's house, and on the third floor there will be the Assistant Superintendent's house, with a sick-room cut off from the rest of the building. The main entrance to the Home will be from Ponton-street, and on the ground floor there will be placed the dining-hall, with service-room, kitchen, &c., while above there is a large hall for meetings. On the second and third floors are the dormitories for the lads. On the Thornybank side there will be on the ground floor the laundries, bathrooms, and lavatories, and on the first and second floors the dormitories, with dressing-rooms and lavatories, will be provided. The access to the various floors will be from a central hall and staircase. The new building will provide room for 150 boys. The site for the building has cost 3,000*l.*, and the estimates amount to about 10,500*l.* The plans have been prepared by, and the whole will be carried out under the direction and supervision of, Mr. Frank W. Simon, architect.

PUBLIC BATHS, GRANGETOWN, MIDDLESBROUGH. —The foundation stone has just been laid of the new public baths at Grangetown. The plans were prepared by Mr. J. M. Bottomley, architect, of Middlesbrough, and the contract for such portion of the scheme as it was thought advisable to provide at once was undertaken by Messrs. Bastiman Bros., of Middlesbrough. The site is located at the corner of Pochin-road and the Market-place. It has a frontage of 92 ft. into Pochin-road, and a uniform depth of 60 ft. The entire scheme comprises a suite of slipper baths in the centre, flanked on the north side by a swimming bath and on the south side by public laundry and wash-houses, the latter facing into the Market-square. It is, however, only proposed at present to proceed with the central block,

which has a frontage of 42 ft. into Pochin-road and a depth of 60 ft. Separate entrances are provided for the men's and women's departments respectively, a pay-office being placed between them, and waiting-rooms on each side. In the men's department there will be eight slipper baths, while six others will be provided on the women's side. In the south-west angle, below the level of the street, is the heating chamber, where boilers will be fixed for serving the baths with hot water. On the first floor will be placed the caretaker's rooms. At the rear of the building is a water tower. Should the remainder of the scheme be decided upon at any future time, the laundry and washhouses will have a frontage into Pochin-road of 22 ft., while the swimming bath will have a frontage of 28 ft.

CONVALESCENT HOME FOR NURSES, BUSBY, GLASGOW.—The Convalescent Home for Nurses, instituted at Busby out of funds provided for the purpose by the late Dr. Samuel Johnstone Moore, is now nearly completed. The buildings consist of the main house to be occupied as the nurses' home, and a cottage adjoining which is to be occupied for disinfecting purposes. There is a washing-house, a drying-house and laundry, a gardener's house, and a gate lodge. The main house is built on sloping ground. The front doorway leads to the entrance hall, cloak-room, and lavatories. From the hall a staircase leads to the upper floor. On one side of the upper corridor are the nurses' sitting-room and dining-room, as well as the matron's room; on the other are the kitchen and kitchen offices. There are nine bed-rooms on the upper floors. The cottage used for disinfecting purposes contains dining-room, kitchen, six bed-rooms, and bath-room. All the arrangements have been carried out under the superintendence of Mr. Frank Burnet, architect.

STAINED GLASS AND DECORATION.

WINDOW, ST. MARK'S PARISH CHURCH, DUNDEE.—A memorial window has been erected in St. Mark's Established Church, Dundee, in memory of the late George Jarvis Bell, of Belmont, and William Kidd. The work has been executed by Messrs. Stephen Adam & Son, Glasgow.

WINDOW, ST. MAGNUS CATHEDRAL, KIRKWALL.—There has been placed in St. Magnus Cathedral, Kirkwall, a stained-glass window to the memory of the late Provost Thomas Peace. The subject depicted is Christ's story of the good Samaritan. The work was executed by Messrs. Ballantyne & Gardner, Edinburgh.

ST. GILES, NEWCASTLE, STAFFORDSHIRE.—New oak seating has been placed in the body and south chapel of the Church of St. Giles', Newcastle, Staffordshire, at a cost of 1,000*l.*, to commemorate the Queen's Diamond Jubilee. The work has been executed by Jones & Willis of Birmingham, from the designs of Mr. John Lewis, architect, Newcastle, Staffs. Three front pews on the south side of the middle aisle are allotted to the Mayor and Corporation on the occasions of their official visits. These are elaborately carved, the fronts being open, and there is a special seat and desk for the Mayor, on each side of which ornamental iron standards are fixed to hold the civic maces. At the ends of the stalls are carved the Shield of the Diocese of Lichfield, the arms of the Borough, the arms of the present Mayor, the Royal arms, the Diocesan crest impaled with that of the present Bishop, and the arms borne on each of the three charters granted to the Borough. The whole of the seats are of oak, waxed and polished, and the outer panels of each pew bear carved devices.

WINDOW, HAWARDEN CHURCH.—The west window for Hawarden Church, to be erected by the members of the Gladstone family to perpetuate Mr. and Mrs. Gladstone's long connexion with Hawarden, is approaching completion. The subject will be the Nativity, from the designs of Sir Edward Burne-Jones.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—The business of the late Mr. John Thompson, the well-known contractor of Peterborough, will now be carried on by his two sons, Mr. Thomas John and Mr. Walter Stuart Thompson, in conjunction with Mr. Walter Hill, all of whom have been for many years practically associated with the business. The firm will now be known as that of John Thompson & Co.

HUDDERSFIELD MASTER BUILDERS' ASSOCIATION.—A complimentary banquet in honour of the election of Alderman W. H. Jessop, J.P., to the office of Chief Magistrate of the borough, was given to his Worship by his fellow-tradesmen of the town and district, the master builders, in the Albany Hall, Huddersfield, on the 30th ult. The chair was occupied by the President of the Association, Mr. Abraham Graham. Mr. John Dawson, in proposing the toast of the evening, "The Mayor," alluded to the visitors, and among them the new Borough Surveyor (Mr. Campbell), to whom they gave a hearty welcome to Huddersfield. He then spoke of the Mayor's connexion in different capacities with local institutions associated with the trade, and said that seventeen years ago there was started in Huddersfield what had proved a most beneficial insurance company on behalf of injured workmen, and their Mayor had presided over the deliberations of the management in a most affable and business-like way, and had been elected as President of the concern from year to year ever since its commencement. In addition to occupying other important posts in the building trade he was a member of the Council of the National Association of Master Builders of Great Britain.—The Mayor, in reply, thanked them for the warm reception given him, and for entertaining him as their guest that night. He agreed with the proposer of the toast that they belonged to the second largest industry of the country. The wages paid annually in the building trade of the country were something like 50,000,000*l.* He remarked upon the pleasure he had in being a member of the Master Builders' Association of Huddersfield and of the Federation of Yorkshire The time was coming when they would be able to meet together and discuss in a more friendly manner the work of their trade than ever they had done before. They knew what troubles they had had to pass through in recent years in connexion with strikes and combinations of workmen, and the only way to meet them was to have sufficient confidence in each other and to act unitedly in defending their interests, so as to carry on their trade in a manner that would be to the welfare, not only of themselves, but also their workmen. He believed they were all anxious to pay a fair day's wage, but what they wanted in return was a fair day's work.—"The Town and Trade of Huddersfield" was proposed by Alderman Calvert. Councillor Firth replied. "The National Association of Master Builders" was submitted by Mr. L. Radcliffe, and responded to by the Mayor and Mr. Biggin (Sheffield). Mr. J. W. Mallinson proposed "The Yorkshire Federation of Building Trades," remarking, in the course of his observations, that at the present time there were eleven associations connected with the Federation, representing from 600 to 700 firms. The toast was acknowledged by Mr. W. R. Thompson (Dewsbury). Mr. George Garton next gave "The Architects and Surveyors." Alderman Stocks, responding on behalf of the architects, said if there were more confidence and less jealousy in the trade they would find more work and better profits would result, and parties all round would be better satisfied than they had been in the past. Speaking as an architect, the man he liked best was he that did work best, and he had always stuck out for a fair price and a fair profit for a man who did his work well. He expressed the hope that the architects of the town would band themselves together in an association as had been done in other towns. Mr. J. H. Hanson replied for the surveyors. "The Visitors" was proposed by Mr. Alfred Crowther, and acknowledged by Mr. R. F. Campbell and Alderman Inman, and the proceedings concluded with a vote of thanks to the Chairman, on the motion of Mr. Allen Jackson, seconded by Mr. S. Hanson.

WEST OF ENGLAND BUILDERS' FEDERATION.—Mr. A. Krauss, of Bristol, presided at the annual meeting of this Federation, held at the Bath Athenæum, on the 3rd inst. The Secretary (Mr. H. J. Spear) read the report, which stated that the Federation was established on April 6, 1897, and this was the first annual report. The objects of the Federation were: "To secure full discussion of, and, where practicable, the adoption of a common policy in regard to questions that may from time to time be raised affecting the trade; to defend the interests of its members against combinations of workmen seeking by strikes or other methods to impose restrictive conditions on the trade; to secure united action and provide mutual support in dealing with any attempt such combinations may make to impose unfair terms on individual employers or districts; to establish branches of the Federation in towns and districts where they do not already exist; to generally guard the interests of the trade, and obtain fair and equitable treatment from architects in relation to quantities and conditions of contract; to raise and maintain a common fund, to be applied and used in carrying out the objects herein stated." An important sequel to the formation of the Federation would, no doubt, be the general establishment of local associations, which at present were few and far between. It was the most mistaken notion possible for men in any trade not to combine personal friendliness and business rivalry, which were as perfectly compatible in the building trade as in any other, and the idea of brother tradesmen treating each other as personal enemies was a wrong, and, moreover, unpaying, policy. This Federation is now represented by the following towns:—Bath, Bridgwater, Bristol, Cardiff, Newport, Plymouth, Taunton, and Weston-super-Mare, and other centres have promised to become federated. The only dispute of any note that has come under the notice of the Federation was that of the stone masons at Cardiff, and the Federation resolved to stand loyally by the Cardiff master builders. At the half-yearly meeting of the Federation, held in Bristol in November last, the Bridgwater Association proposed:—"That in order to meet the risks and expenses incurred by contractors through the Employers' Liability Act, the Federation recommend that a sum to cover the premium of the insurance against employers' liability should be stated in bills of quantities, the same as fire insurance, and that the same should be paid by the employer instead of the contractor." The Federated Associations have been requested to take the opinion of their local architects upon this point. With reference to the Workmen's Compensation Act, numerous circulars have been issued by the various insurance companies, dealing with this question, which point out that by unity of action on the part of all the members of this Federation, they would be able to secure lower rates than those granted to individual builders, and the first step in order to secure this will be to inform the insurance companies of the total amount of wages paid annually in the building trade, within the area covered by the Federation during the past two or three years. Therefore the secretaries of the associations are requested to inform the secretary to the Federation, in confidence, the amount paid by their members in respect of wages during that period, and he will notify the offices of the lump sum (without mentioning names) paid by the Federated Builders in the shape of labour expenses.—In moving the adoption of the report, the Chairman said that since the principal towns in the West of England had belonged to the National Association, and had formed themselves into a federation, there had sprung up a much closer friendship between them as employers than there had ever been before, and he sincerely hoped that that friendship would increase, as it had strengthened their cause in the various difficulties they had to contend with. As regards the Employers' Liability Act, which comes into force on July 1, they had, as proposed by their Bridgwater friends, approached the Bristol Society of Architects, that in future a clause should be inserted in the bill of quantities, the same as a fire insurance clause, so that the same shall be paid by the employer instead of by the contractor, and this same line had been taken up by the other federations, and a satisfactory result was expected. At a recent special Council meeting held at Derby, a resolution was proposed and agreed to that the different counties in Great Britain should be divided into four county federations. The West of England (subject to any alteration to meet local requirements) consists of the following counties:—Hereford, Monmouth, Gloucester, Wilts, Somerset, Devon, Dorset, Cornwall, and Glamorgan, and the sub-committee had taken steps to settle the boundaries, and to make full arrangements, and to report for the next month's special meeting at Derby. He asked them all to do their best to get all towns in their neighbourhood to join the Federation. With reference to the Workmen's Compensation Act, up till now they could not get for certain what percentage they would have to pay after July 1; some thought 30s., others 40s., and others 50s. per 100*l.* wages; but the Builders' Accident Insurance had given them a fixed sum, viz., 15s. per 100*l.* to fully insure against all three Acts; the extra risk would be taken on for any amount they wished to insure for; 15s. insurance represented ¾ per cent., and the extra risk for insurance they must never calculate less than 1½ to 2 per cent. in future contracts.—Mr. Symonds seconded, and the report was adopted, as were also the accounts, which showed a balance in hand of 17*l.* On the motion of Mr. Harris, seconded by Mr. Hayward, Mr. Symonds was unanimously elected President for the ensuing year. Mr. Wooster was elected Vice-President, on the motion of Mr. Krauss, seconded by Mr. Shorney. Mr. Linton (Newport) was re-elected hon. treasurer, and Messrs. Harris and Mercer auditors. A discussion took place on the insurance against accidents, Mr. Kitch feeling that a clause that on all contracts a percentage should be allowed for accidents should be inserted. Mr. Church said a large contractor stated at the National Council that he should add 2 per cent. to all his contracts, whether he got them or not. Some members suggested that insurance amongst the trade in a town could be effected, but the Chairman did not think so. They had tried in Bristol, and failed. He felt insurance in a good company was the best. Bridgwater was chosen for the next meeting, and a vote of thanks to the Chairman concluded the meeting.—*Western Press.*

BUILDING REGULATIONS IN GLASGOW.—The Fire Brigade Committee of the Glasgow Corporation, at a recent meeting, considered the building regulations in force in the city, and came to the finding that the time had arrived when workrooms with ten employees or upwards be inspected to ascertain if the exits are sufficient. It was also felt that additional powers should be obtained under the Factory and Workshops Act for inspection of factories; and it was meantime agreed to make a recommendation to the Dean of Guild Court that plans should not be passed until a docket was produced, signed by the Master of Works and the Chief of the Fire Brigade, showing that sufficient exits were provided.

APPOINTMENT.—At a special meeting of Stirling Town Council recently, for the purpose of appointing a master of works for the Burgh in room of Mr. F. G. Holmes, who has been appointed Burgh Surveyor of Govan, the following short leet was submitted:—Charles Brown, Burgh Surveyor, Airdrie; S. W. Dalzell, civil and mining engineer, Port Glasgow; Andrew H. Goudie, assistant master of works, Paisley; Edward Twist, civil engineer, Donabate, Ireland; Prittie, Burgh Surveyor, Selkirk; and Charles Massie, C.E., master of works' department, Glasgow. Mr. Goudie was elected.

THE COUNCIL CHAMBER, BRISTOL.—According to the *Bristol Mercury*, there are serious complaints amongst the councillors about draughts in the

council-chamber. The excessive draught in the chamber has led to inquiries, which have resulted in the explanation that the special electrical ventilation apparatus provided on the plan of Professor Wertheimer has never had a real chance of justice being done to it. This arises, the *Mercury* states, "from the fact that it is so scientifically arranged and adjusted for precise conditions that the moment these conditions are broken the delicate arrangement of the apparatus is dislocated and its effect entirely lost. It is stated that it was designed for a room with closed doors, and the ordinary ventilators in the walls of the hall intended to admit fresh air should be left open. But the practice is for all these ventilators to be closed, as the room is felt to be too cold, and then only too often the doors at the extreme end are thrown open. Immediately these conditions prevail the whole effect of the electric ventilator is subverted, with the result that an insufferable draught is generated."

THE METROPOLITAN ASYLUMS BOARD.—A meeting of the Metropolitan Asylums Board was held on Saturday last, Sir E. Galsworthy presiding, at the County Hall, Spring-gardens. A letter was read from the Local Government Board stating that the report of the Special Committee *re* Brook Hospital expenditure "does not contain specific replies to the several questions asked in their letter of October 22, 1897;" that the Committee did not employ a competent surveyor as suggested by them, and as ordered by the managers; and that they "are still of opinion that the course suggested by them should be adopted, and they will be glad to receive the information asked for in regard to each of the points referred to in their letter." Mr. White said he was afraid the Local Government Board had not given sufficient attention to the Committee's report. He would move that a letter be sent to the Board directing their attention to the particular points thoroughly dealt with in the Committee's report. He was sure that if the Local Government Board went carefully through the report, they would see that the questions they asked had been fully answered. Mr. White proceeded to read a draft letter informing the Local Government Board that the circumstances under which departures from the contracts were made were fully set forth in the report, and that the managers had nothing to add in explanation. When the tenders were accepted the managers appointed a committee to exercise a general supervision whilst the works were in progress, but it was obvious that they could not be expected to know whether the works were being carried out strictly in accordance with the specifications, except when their attention was directed to it by the architect. Immediately the Hospital Committee were aware of the differences between the amounts of the tenders and the amounts certified for payment, they applied to the architect, received a detailed statement, and subsequently appointed the special committee of inquiry. The reason why the committee did not adopt the suggestion of the Local Government Board to employ a competent surveyor was fully stated in the report. The managers had endorsed the action of the committee, and they were still of opinion that the work having been measured by independent quantity surveyors, and there being no reason to suppose that the managers had not received value for their money, no useful purpose would be served by incurring the expense suggested. Mr. White added, by way of comment, that it had been clearly established that the architect had exceeded his instructions, and was practically responsible for what had occurred. Mr. Jackson Hunt seconded the motion. Mr. Brass moved that the consideration of the matter be adjourned for a fortnight, and that in the meantime the letter drafted by Mr. White be printed on the agenda. He protested against the question being dealt with in a hurry, and before they had had time to fully comprehend the numerous points in Mr. White's letter. Only a month ago a resolution was passed to the effect that legal opinion should be taken with regard to the liability of the architect for extra work ordered or allowed by him on his own responsibility, and now that order was to be "discharged." As to the cost of the proposed inquiry, it was nothing as compared with the enormous extra expenditure on the hospital which the committee were taking so cooly. Admiral Adean seconded. Mr. Purchese said they had better institute an inquiry by an independent surveyor, or the Local Government Board would do it for them. The amendment was then agreed to. The report of the General Purposes Committee, containing the following, was formally presented and passed:—"At a meeting of the Board on March 26 last, the report of the special committee *re* Brook Hospital expenditure, together with all reports and other documents having reference thereto, was remitted to us with instructions to take legal opinion as to the liability of the architect to refund to the managers all or any portion of the cost of the extra works or claims ordered or allowed by him on his own responsibility. As, in our opinion, the instruction thus conveyed to us by the Board would involve the managers in very considerable expense, and would serve no useful purpose, we recommend: 'That so much of the reference from the Board of March 26, 1898, as instructs the General Purposes Committee to take legal action in the matter of the Brook Hospital expenditure be discharged; and that in lieu thereof the Committee be authorised to take counsel's opinion as to the liability of the architect with regard to the claims of the contractors allowed by him in respect of delays.'"

YORKSHIRE BUILDERS AND THE COMPENSATION ACT.—A meeting in connexion with the Yorkshire Federation of Builders' Associations was held at Keighley on the 6th inst., when the principal speaker was the Mayor of Huddersfield (Alderman Jessop). In alluding to the Workmen's Compensation Act he prophesied that many of the smaller contractors would be ruined by the increased demands of the new Act, in the event of a few unfortunate accidents occurring, unless they had their workmen insured. He thought it was coming to this—that contractors would have to specify an allowance for insurance when making out their estimates for contracts.

CAPITAL AND LABOUR.

STONEMASONS' STRIKE, MID-CHESHIRE.—The strike of stonemasons in Mid-Cheshire, which commenced recently, was brought to a satisfactory close on the 4th inst., the masters and men agreeing to a compromise. The men asked for 9d. per hour in lieu of 7¾d., and a nine hours instead of a ten hours' day. The whole of the employers have now agreed to pay 8¼d. per hour without any reduction of hours, and to these conditions the Stonemasons' Society have agreed.

MASONS' STRIKE AT SWANSEA.—The master builders of Swansea, except in one or two instances, not having granted the masons' demand for an increase in pay of from 8d. to 9d. an hour, the men came out on strike recently. The contractors for the parish church and the east dock extension conceded the advance asked for, but only a very small percentage of the masons of the towns are employed at these two places. Cardiff masons are at present paid 8½d. per hour, so that the local men are asking for a ½d. per hour more than the masons in the sister town are in receipt of.

BRICKLAYERS' WAGES, BLACKPOOL.—The six months' notice to the Blackpool master bricklayers for one penny an hour increase in wages terminated on the 30th ult. The 10d. an hour had been agreed to, but some masters wanted the insertion of the word "competent" before the word "bricklayer" in the rules. This the men objected to; only one or two masters, who employ about seventy bricklayers between them, have refused to sign the rules. In Blackpool there are about 400 members of the Bricklayers' Society, and the seventy men who have come out on strike will receive support from the society whilst out.

MASONS' AND BRICKLAYERS' DISPUTE, TIVERTON.—A number of masons and bricklayers, members of the Tiverton branch of the Operative Bricklayers' Society, have come out on strike for the following reasons. They demand a revision of the working rules and an increase of wages from 5¼d. an hour in the case of some and 5½d. in the case of others, to a minimum rate of 6d. per hour. The rate paid in Exeter to masons and bricklayers, they say, is 8d. an hour, and it is therefore contended that the request for 6d. an hour in Tiverton is only reasonable. In accordance with the rules agreed on between masters and men, three months' notice of the demand was given, and the notice expired on May 1. The disputes affect about eleven firms and thirty men. The Masters' Associations have refused the request of the men.

CARPENTERS' AND BRICKLAYERS' WAGES, CATERHAM.—The master builders of Caterham have conceded ½d. per hour advance, with a code of working rules, to carpenters and bricklayers.

MASONS' STRIKE, PRESTON.—Among several other towns in Lancashire, Preston is affected by the present dispute in the stonemasonry trade. One or two firms in the town have already conceded the demands of the men. Briefly put, the question is as to worked stone. The men ask that all stone should be worked in the town where it is set. About 100 men are out in Preston. Six months ago the operatives gave notice demanding a penny an hour advance; higher pay for overtime; the introduction of a rule requiring that only masons should work machines, and that machines should only work so many hours per day. The employers thereupon gave counter notice removing all restrictions on the use of ready worked and sawn stone, and that one apprentice should be allowed to every three masons, instead of seven, as at present. A meeting was held at which the employers offered the men an increase of one half-penny an hour, making an advance of 9d. to 9½d., and the retention of the old code of rules with the exception of that referring to worked stone. The operatives absolutely declined to entertain the latter, and the proceedings at once terminated.—*Lancashire Post.*

MASONS' STRIKE, LANCASTER.—A lockout or strike commenced at Lancaster on the 2nd inst. affecting the masons. The question at issue, it is stated, is as to the hours to be worked in the winter months. Last year, the men got an advance of ½d. per hour, making their wage 9d. per hour for 49½ hours a week. The masters then wished to alter the working hours in winter, contending that they were losers by the men working in the dark, but were reminded by the men of the rule requiring six months' notice of change. Meetings have been held to arrange the matter, but without success. The men state they have given away fourteen hours, and it is agreed that the whole dispute is as to the remaining two and a-half hours. The masters are nearly all connected with the recently-formed Building Trades Federation of Lancashire and Cheshire, and the men are organised.

STRIKE OF BLACKBURN STONEMASONS.—On the 30th ult. the stonemasons of Blackburn and district came out on strike for an advance of a halfpenny per hour and against a proposal of the employers to abolish a rule prohibiting the importation of stone worked in other towns. Nearly all the towns of East Lancashire, as well as Manchester, are involved in the same dispute.

MASONS' STRIKE, BARRY.—For some time past negotiations have been proceeding between the Barry Master Builders' Association and the Masons Society respecting the operation of a code of rules to govern all work carried out in the district. The Masons' Society gave six months' notice of their intention to introduce this code of rules. That notice expired on the 30th ult. The Association has agreed to all the rules excepting that which seeks to prevent piecework and sub-contracting. The Association represents altogether twenty-eight building firms in the district, and the Masons' Society have already secured the operation of the rules among about thirty-two non-associated employers, and the men in the employ of the latter will continue working. The men claim that the rules are identical with those in operation in Cardiff and other large centres, and are insisted upon in all contracts let by public bodies.

STRIKE OF STONEMASONS, NORTHWICH, CHESHIRE.—On the 2nd inst. the stonemasons connected with the Northwich branch of the Operative Stonemasons' Society, comprising the towns of Northwich, Winsford, and Middlewich, struck for an increase of 1¼d. per hour in wages and a reduction of one hour per day in the number of hours worked. At present they only receive 7¾d. per hour, and work ten hours per day.

JOINERS' STRIKE AT LEIGH, LANCASHIRE.—On the 2nd inst. the joiners in Leigh, Atherton, and Tyldesley, numbering altogether 100 men, went on strike. Their original demand was an advance in wages of ½d. per hour. The Master Builders' Association agreed to give the Manchester rules and wages, or an advance of from 8½d. to 9d. per hour, a reduction of the week's working hours from fifty-one to forty-nine and a half, and no payment for walking time for distances within one and a half miles. The men refuse to accept the Manchester rules unless an apprentice rule is added, and they consequently struck work.

THE BUILDING TRADE, CLEVEDON, SOMERSETSHIRE.—The expected strike in the building trade has been averted. The masons had given six months' notice of a halfpenny per hour advance, which was acceded to at a meeting of masters. The carpenters had given three months' notice for a similar rise in wages, but the masters objected to so short notice. They, however, met the men by a promise of the advance on June 1.

CARPENTERS' STRIKE, WESTON-SUPER-MARE.—A large number of carpenters ceased work recently at Weston on account of a difference with their masters. Their demand for an increase of wages to the extent of ½d. per hour was acceded to, but as the masters insisted upon altering certain of the rules of the society the men decided to go out on strike. At a meeting of the men on strike, a resolution was passed to the effect that no alterations could be, or should be, passed in the working rules without the six months' notice required by Rule 9, to which the masters had agreed, being duly given.

THE BRICKLAYERS' LABOURERS' STRIKE AT WARRINGTON.—About one-half of the Warrington bricklayers' labourers who came out on strike recently have now returned to work, the masters having conceded their demand for an increase of wages from 6d. to 6½d. per hour.

PLASTERERS' WAGES, NORTHAMPTON.—The dispute which has for some time existed between the masters in the Northampton building trade and the plasterers has been settled. The masters have offered to increase the wages by the addition of ½d. per hour, which is half the amount appealed for. It has also been agreed to alter one of the rules to read as follows:—"That the men be allowed to have one apprentice to two men and two apprentices to four men."

PLASTERERS' STRIKE, TORQUAY.—Plasterers at Torquay to the number of fifty or sixty have struck work for an increase of pay. The best men have been getting 7d. an hour, while others have received 6d. or 6½d. The men ask for 7½d., which they say is the rate at Exeter. The employers offer 7d. as a standard for efficient plasterers.

THE JOINERS' DISPUTE, LIVERPOOL.—In the beginning of November last the operative joiners of Liverpool and district gave notice to the Master Builders' Association, that they required an advance of ½d. per hour, which would be equal to 9½d. per hour for journeymen all round. The master builders replied at the time by a counter-intimation of ½d. per hour reduction. According to a rule which has been in existence for some time, six months must elapse before any such notice can take effect, and in the present instance it was due to expire on May 1. In the meantime interviews and negotiations between representatives of each Society have been pretty frequent, but they did not

take definite shape till the eve of the day on which the notice expired. A meeting, convened by the Operative Joiners' United Committee, was held in the Oddfellows' Hall, St. Anne-street, under the presidency of Mr. William Shipman, who intimated that the matter had been satisfactorily settled by the master builders conceding the point. For the future, therefore, the standard wage would be 9½d., instead of 9d. as formerly, an advantage in which painters and slaters were also to share.

LABOUR AND WAGES AT PETERBOROUGH.—The municipal employees, Peterborough, to the number of forty, have presented a petition to the Council asking for their wages to be increased a shilling per week owing to the increased rate of pay which can be obtained at the neighbouring brickyards at Fletton. The Town Council are very unwilling to give way on the point, and it is not unlikely that the matter will be brought to an issue very shortly, the men contending that they will not accept a rate of payment which is considerably below the standard which brickyard labour has established in the district.

THE BUILDING TRADE STRIKE AT SOUTH SHIELDS.—At a meeting of master builders and representatives of the employees at South Shields on the 2nd inst., the strike, so far as the bricklayers and plasterers were concerned, was practically settled. With respect to the long-standing dispute between these two classes of men as to which was entitled to certain cementing work, it was agreed that cementing and tiling be left to the discretion of the masters. The advance of 1d. per hour to the bricklayers having been promised on condition of their agreeing to this was thereupon granted. The question of labourers' wages was not settled. Work has been resumed at the following rates :—Bricklayers, 10d. per hour ; plasterers, 9½d. per hour ; labourers, 6½d. per hour.

OLDHAM STONEMASONS' DISPUTE.—On the 29th ult. a general meeting of the operative stonemasons of Oldham was held at the Roebuck Hotel, King-street. The meeting was called to consider the demand of the masters that all kinds of ready-dressed stone should be brought into the town. It appears that two years ago an agreement was entered into by the operative stonemasons and the employers that only certain classes of worked or ready-dressed stone should be imported into the town, and this was signed on behalf of both associations by the respective secretaries. Six months ago the employers gave notice—in accordance with the terms of the agreement, which specified six months' notice of alteration should be given—that they intended to hold themselves at liberty to introduce any kind of dressed stone, and that any employer in another town could bring in the material ready dressed so long as he paid the standard rate of wages in vogue in his district. The matter has gone through various stages, and recently a deputation of the men waited upon a sub-committee of the employers, and the subject was fully discussed. The men laid their objections to the proposal before the sub-committee, and particular stress was laid on the objection that outside employers might bring ready-worked stone to Oldham provided they paid "the standard rate of wages" of their own district. Subsequently the dispute was amicably settled, the master stonemasons having decided that no steps be taken at present *re* the worked stone question.

THE JOINERS' STRIKE AT BANGOR.—At a recent meeting of the master joiners of Bangor, an agreement was arrived at as to two of the men's demands —namely, that wages are to be paid weekly, and that joiners are to be engaged and paid by the hour. The men's third demand was as follows :—"That the rate of payment be as follows when able to work full time : Inside or outside to be paid for at the rate of 6½d. per hour for fifty-five hours per week, and that for thirty-five weeks in the year ; the remaining seventeen weeks to be paid for at the rate of 7½d. per hour for a week of 47½ hours." With regard to this proposal, the masters resolved as follows :—"That the rate of payment be as follows : When able to work full time inside and outside, fifty-five hours per week, at the rate of 6½d. per hour. Outside work to be as follows—four weeks for fifty-and-a-half hours at 7d. per hour, twelve weeks for forty-eight hours at 7d. per hour, and thirty-six weeks for fifty-five hours at 6½d. per hour." In effect this is granting the men's demands except for ½d. per hour. There are other points, but practically the parties have arrived at an agreement on all of them with the exception of that just mentioned, and here, for the present, both sides remain firm.

ARBITRATION IN THE NORTH STAFFORDSHIRE BUILDING TRADE.—The members of the Potteries, Newcastle, and Leek branch of the Operative Bricklayers' Association having made a demand for an increase of a penny upon the present rate of 8¼d. per hour, and the Master Builders' Association having refused to accede to such demand, the dispute has been referred to Mr. Talbot Baines, an arbitrator of the Board of Trade. The case for the applicants is that they considered the advance of a farthing per hour granted by Sir W. Markby in 1896 hardly enough under the circumstances, and, having submitted to that decision for two years, they thought they were justified, in the present state of the building trade, in again asking for a revision of the scale. The case for the builders is that there has been no such change in the trade as to justify the demand made by the bricklayers, and that such demand has been made because the bricklayers thought it was possible that they themselves would receive a notice for reduction of wages from the employers. The stonemasons and bricklayers' labourers had also asked for an increase of 1d. an hour, but the former had accepted ¼d., making their wages equal to those of the joiners and bricklayers, and the latter had withdrawn their notices. At an inquiry into the dispute, held at Stoke-on-Trent, the arbitrator endeavoured to effect an amicable settlement, but failed. He said he would give the subject his full consideration, and forward his decision in due course.

DERBY BUILDING TRADE.—The master builders of Derby have, by an amicable arrangement, conceded an advance of one halfpenny per hour, with revised working rules, to the joiners and carpenters.

LEGAL.

CASE UNDER THE LONDON BUILDING ACT, 1894.

At Guildhall, before Mr. Alderman Smallman, Mr. J. Husbands, Basinghall-street and London-wall-avenue, was summoned at the instance of Mr. Edmund Woodthorpe, District Surveyor for the northern division of the City, for that between December 21, 1897, and January 5, 1898, he did counsel and procure one James Atkinson Spencer, of Commercial-road, Lambeth, to contravene a section of the Building Act, 1894, by making an opening in the party wall used for the separation of 4, London-wall-avenue ; James Atkinson Spencer, builder, was summoned for contravening Section 77 of the Building Act by uniting 45a and 46a, Basinghall-street with 4, London-wall-avenue. Mr. Horace Avory prosecuted on behalf of the London County Council ; Mr. George Elliott (with whom was Mr. H. Gordon Davies) was for the occupier (Mr. Husband) ; and Mr. Archer White represented the builder (Mr. Spencer). Mr. Avory said the Building Act of 1894 was passed for the very purpose of protection from fire, and since the great conflagration in Cripplegate the importance of the matter now before the Court could not be over estimated. The complaint was that an opening had been made in these buildings — buildings which were not in one occupation, and so uniting what were practically two buildings, thus contravening the Act. Mr. Woodthorpe, the District Surveyor, had been asked to give his sanction to this opening being made, but he had refused, and then, advantage being taken of the last Christmas holidays, a door was made on the second floor. No building could be so united legally except if it were wholly in one occupation or adapted to be so, and evidence would be given to show that it was not. Mr. Edmund Woodthorpe stated that the whole of one of the buildings was in the occupation of Mr. Husbands, but the ground floor was tenanted by Messrs. Singleton & Bender. On December 21 he found a party wall had been made on the first floor, thus connecting Nos. 45a and 46a, Basinghall-street with 4, London-wall-avenue. He had never given his consent to this. Mr. Elliott contended that there was no uniting, because these buildings were practically one, and there was no party wall. Technical evidence having been given, Mr. Benjamin Housgood, the original builder and owner of the premises, said they were built as a speculation—to suit either one or more tenants. The case having been argued, the Alderman said : I find as a fact that these buildings were constructed and adapted so as to be wholly in one occupation, and therefore I shall dismiss the summons. I think the case has been very properly brought forward by the District Surveyor and those instructing him, and under the circumstances I do not propose to allow any costs. A second summons was adjourned for a week.—*Times.*

THE WESTMINSTER BUILDING DISASTER.

At the Coroner's Court, Horseferry-road, on Monday, Mr. John Troutbeck, the Westminster coroner, resumed his inquiry into the deaths of William Clifford Morse, Joseph Henry Parker, Charles Weatherley, Ernest George Lillywhite, Hugh John Bray, George Bridge Hillings, and Henry Clements, who were killed through the collapse of a building in Orchard-street, Victoria-street, Westminster, on the 21st ult. Mr. J. L. Blenkinsopp, one of her Majesty's Inspectors of Factories, appeared for the Home Office ; Mr. A. C. Kent for Mr. W. Rickard, the chief contractor of the works ; Mr. A. Thompson for the General Labourers' Amalgamated Union ; Mr. G. L. Edwards for the roof contractor, Mr. S. Murrell ; Mr. Hugh Fraser for Mr. Drury, the District Surveyor ; while Mr. T. Blashill, Superintending Architect to the London County Council, and Mr. Seager Berry, appeared for that body ; and several other solicitors for the relatives.

The Coroner intimated that the London County Council had given him every assistance in the inquiry, and he had been able to appoint Mr. John Slater, a member of the Council of the Royal Institute of British Architects, to sit with him as Assessor.

Mr. Charles James C. Pawley said that he was instructed two years ago by Mr. Rickard to act as his architect for the erection of the building. Witness prepared plans, which were submitted to the authorities. The original plans were now in Court, but the south block, which collapsed, was entirely replanned. The alteration affected the whole of the interior of the building. He believed the plans, as altered, were submitted to the District Surveyor. The work was carried on under witness's supervision, and he visited the building on an average four times a week. Subject to the terms of the Building Act, he thought he might say he had a free hand. In November last her Majesty's Office of Works took a lease of the building, but the agreement did not affect the work of construction. On the day before the collapse he had been on the roof and noticed that about three-quarters of it had been concreted about three weeks, and that the remaining quarter had been quite recently done. Carpenters were fixing skylights, and considerable "jarring" was going on. One of the skylights was immediately over the part which fell. There was nothing wrong in the "jarring." He gave Mr. Simpson, his assistant, strict instructions not to allow the centering to be struck, having in his mind the possibility of an accident, as the concrete was not dry. There was a brick pier which was capable of sustaining a weight of 120 tons. As a fact it had to bear only 47 tons, carrying 14 ft. of each of the six floors. An iron stanchion, shown on the plans, had not been put in, nor had it been ordered. The effect of the omission was to throw a greater weight on to the pier, but in his opinion it had nothing to do with the accident. After the accident the piers had been demolished. He was convinced that the collapse occurred through the removal of the centreing. He estimated that between 15 and 20 tons of concrete fell through the sixth floor. The impetus of 15 or 20 tons of concrete would be tremendous, as the seventh floor was not in to break the fall. The girders were of steel. He could not tell what bearing the girder had on the pier, but it should have been 9 in. Every girder was still in existence. He had asked Mr. Collins, District Surveyor, and Mr. E. Groom to make an examination. The steel girders were by Drew-Bear, Perks, Ramson & Co. and were ordered by Mr. Rickard, and he took his instructions from the drawings (produced).—The Coroner ; Is there no means of testing your girders after they are fixed ?—The Witness : No.—You noticed these girders after the collapse ? What did you notice ?—I saw they were bent. The witness added that he noticed that although the girders came from the brickwork, it was because the brickwork had been crushed by the weight pressing on the girders. The pier was 2 ft. 6 in. thick and 80 ft. high, but he believed it was a rule for architects that a pier must not be higher then twelve times its own thickness, so that really it should have only been 30 ft. high, but the reason of it being run up so high was because it appeared quite safe and well hemmed in, and was not what is known as an "independent" pier. The witness then gave details as to the fixing of the girders into the mortar, concrete, and brickwork. Asked whether he wished to add anything to what he had already said, the witness said the accident was caused through the concrete roof falling on to the sixth floor.

At this juncture Mr. Kent said the witness had been advised to obtain legal assistance, and counsel would be instructed for his re-examination. Under those circumstances he would ask the coroner to allow the re-examination to stand over.—The Coroner said his examination of the witness must not be regarded in the nature of cross-examination. He would be cross-examined by people having no hostile feeling towards him.

Mr. George Simpson, an architect and surveyor, stated that he was assistant to Mr. Pawley, the previous witness, and in conjunction with him superintended the building of Abbey-mansions. He gave the building more attention after November 17, the day on which the Office of Works took it over. He saw the men putting in the centreing for the concrete roof, but he could not say he saw it commenced. The centreing was supported by quartering secured with bolts, the whole resting on the lacing joists of the roof. He did not give directions as to the concrete to be used. The concreting of the roof was done in one continuous job, and he should say five or six days before the fall. Murrell's men put it in. Mr. Pawley gave the witness specific instructions not to allow the centreing to be removed. He immediately told Murrell so. On the morning of the day of the accident he was on the roof, and saw two bricklayers pointing a chimney and some carpenters at work on a skylight. After the collapse Murrell said he had instructed his foreman not to strike the centreing. No clerk of the works was engaged, and he did not consider one necessary, as he and Mr. Pawley were looking after the building. He knew that the centreing had been struck, because it was lying on the adjoining roof.

Mr. William R. Rickard, City-road, a builder and contractor, said that about two years ago he entered into an agreement with the freeholder for the erection of these mansions, and he instructed Mr. Pawley to prepare plans and specifications. It was his own venture. It was in 1896 that he began the north block on the original plans, which were altered when he got up to the first floor. The south block was not, however, commenced on

the original plans. The sub-contract for the brickwork was placed with a Mr. Thorpe at so much per rod. He (witness) had no control over the brickwork. He had a sub-contractor for the flooring, and had no control over that. The same remark applied to the roof and the carpentering.—The Coroner: What part of the building had you any control over?—The Witness: The labourers' work.—Continuing, he said it was to his own interest to see that the work was done as contracted for.—Pressed by the coroner, the witness admitted that he had no money of his own in the undertaking; somebody else advanced the money. On November 17 last he sold his interest in the concern for 1,000*l.* profit. He sold it to the freeholder, Mrs. Leeds. He was to finish the building at prime cost. He estimated the building to cost 20,000*l.* up to the roof. There was no agreement as to the cost. He took out quantities, and thought he would get up to the roof for 20,000*l.*—It did not affect his pocket if the building stood or fell after November last. He believed the concrete was to consist of four parts of coke breeze and one part of best Portland cement. It was to be turned over once in a dry state, and twice while wet, but he did not know whether that was carried out.—By the Coroner: The way in which the concrete was mixed was very important.

The inquiry was then adjourned until Wednesday. The Coroner, at the opening of the proceedings, said he had been in further communication with the Home Secretary and the London County Council, and had arranged for the calling of expert evidence at a later stage of the inquiry. The witness would be Mr. Blashill.

Mr. Horace Avory, who now appeared for the first time, asked the Coroner to allow the further examination of Mr. Pawley, the architect, to stand over, in order that he might be fully instructed to watch his interests.

The Coroner, in assenting to this course being adopted, said he wished to mention that the Assessor had received certain anonymous letters making suggestions. That was a very improper course, and if any one had suggestions to make as to what happened or did not happen he should give in his name and he would be summoned to give evidence.

Richard Martin Collins, stonemason, said he was employed by Mr. Courtney, the contractor for the stonework. He commenced working on the South block in August last, when he noticed the condition of the building. The brickwork was let to Mr. Thorpe. Some of the bricks were soft, and a great many cartloads were brought from another job, for which they had been rejected. These were used for the internal walls of Abbey-mansions. Some of the bricks fell to pieces by mere handling, and were thrown into the mortar-mill. Mr. Thorpe only found the workmen. He could not swear that he saw any of the soft bricks used in the construction of the pier which supported the floor girders. The pier measured 3 ft. 6 in. by 18 in., not 3 ft. 6 in. by 2 ft. 6 in., as stated by the architects. He measured it himself. Witness never saw Mrs. Leeds, the freeholder. Mr. Andrews used to sign for her.—The Coroner said it was very curious, after his remarks at the previous sitting, that Mrs. Leeds was not legally represented. Witness went on to say that the stone templets supplied for the pier were not used for the pier at all. That would certainly affect the solidity of the building. He fully realised the serious nature of his evidence. The foreman bricklayer was responsible for the proper templets being used, but the men used to take the first templets that came to hand. When he protested against the small templets being used he was jeered at and told to mind his own business. The ordinary mortar was used. Men did not stay there very long. Mr. Thorpe was responsible for the fixing of the girders. The principal carriage girder went into a flue at both ends. He believed that a girder went right across the pier. The lacing girders were not bolted up to the carriage girders as they should have been. He never saw any holes drilled in the carriage girders for the bolts. He made no observation about it, as it was not his business. Mr. Thorpe said nothing to him about the drilling of the holes. He had a practical knowledge of cement, using it daily. As to the cement on this job, it was of the usual kind. He knew Mr. Rickard, the contractor, who never gave any directions. Mr. Pawley had given witness instructions. Mr. Pawley had often said, "I am the builder here." Hundreds of thousands of the soft bricks were inside the walls now. Skinner was foreman over the concrete flooring. The building was up three or four floors high before a girder was put in. The templets were put in and holes left for the girders by the bricklayers.

By Mr. Hudson: None of the girders below the roof in the South block had any holes in them. He had seen the outdoor manager of Banks' Fireproof Construction Syndicate on the building hundreds of times. To the Coroner: He had never heard an iron stanchion mentioned. The 9 in. wall, from the end of which the stanchion would have gone, was not built in the basement while he was there. By Mr. Kent: He would swear that on April 2 the girders were not bolted.

William John Waller Beckey, outdoor manager of Banks' Fireproof Construction Syndicate, said they were instructed by Mr. Rickard to supply the fireproof floors. It was not correct to say that Parker was in the employ of witness's firm; he was one of Murrell's leading men for the construction of the roof. Witness saw every floor before it was concreted, and, in his belief, on the second and third floors the lacing girders were bolted. He had seen concrete being wrongly mixed for the roof, but he said nothing about it as it was not his business. Instead of turning it over twice while dry the men poured water on it at once. He saw it sent up to the roof. He did remark to Andrews, the general foreman, that the cement was being badly mixed, but Andrews made no reply. By Mr. Hudson: He could not be positive as to the bolting of the girders. He had only to concern himself about the lacing joists. At the time of the collapse the second, third, fourth, and fifth floors had been concreted, and they were doing the fourth and fifth floor landings. The centreing for the sixth floor was in, and the seventh floor was clear.

James Andrews, Holloway-road, said he was a carpenter and joiner and general foreman of this job. He was employed by Mr. Rickard. He remembered alterations being made on the plans. The ground plan was altered several times. To the best of his belief they had got up to the first floor front and the second floor back before he got the details. The brick pier overhung the wall on which it was built. He had a conversation with Mr. Thorpe about the pier, which he thought should have been a little thicker than the specification gave, and it was decided to make it five bricks by two and a half bricks. That was after Mr. Pawley's attention had been drawn to the matter. He used his own discretion as to the way in which the templets were put in. They had a specification when the footings were put in, but it was afterwards taken away—he believed to the architect's office. He never saw the specification after putting the foundations in. Mr. Pawley told him to put in 4-in. templets, but he could not say that he was ever told to put three templets into the pier. He did not think three templets would weaken the pier. Except for joinery, he never used the specification after the footings, though he was aware it was intended to convey instructions. He considered, as general foreman, he had control over the many sub-contractors. He did not know who made the sub-contracts. All he could do in the event of anything going wrong was to reason and argue with the man. The Coroner: You had no control as foreman? Continuing, the witness said the ironwork and concreting for the roof were contracted for by Mr. Murrell. He remembered Mr. Beckey calling his attention to the way in which the concrete was being mixed, and witness reported the matter to Mr. Murrell's foreman, Parker, telling him that the concrete should be turned over at least once while dry. The Coroner: The specification says "at least twice." All through this case it has been "Please, sir, it's not me, but the other fellow." Isn't it very important that the concrete should be properly mixed? Witness admitted that it was so. At the moment of the accident he was in his office. Much to his surprise, he discovered that the centreing had been struck and was packed up on the adjoining roof. The Coroner: The concrete roof had been up a fortnight. Why should you be surprised?—Well, that was all I could think of. I am against concrete roofs, as they are too heavy. All the floors came down, as well as the roof and the pier. In reply to further questions, witness said he heard that a barge-load of bricks came from another job, having been condemned there, to Abbey-mansions. There were about thirty-five thousand of them, and either Mr. Rickard, or Mr. Simpson, the assistant architect, told him to do the best he could with them. Many of them were broken and soft; the whole ones were used for the internal walls. The soft ones were put into the mortar-mill.—The Coroner said that with so many bricks in the mill there was room for very little sand. Coming to the girders, witness said he allowed for a 9-in bearing, and the bearing on the pier was 14 in. or 15 in. During the luncheon adjournment he had been to the scene of the accident and had seen bolts in at least three of the girders. By Mr. Thomson: He saw on the plans that a stanchion was to be erected, but he did not erect it because he was not ordered to do so. Then, again, an engine stood in the way. When he was told to go on with the ironwork he had no specification or details. Mr. Hudson said the girders were ordered by the witness on postcards. The Coroner said it was quite inexplicable, and perhaps Mr. Hudson would adduce further evidence on the subject.

The witness Andrews said the majority of the bargeload of bricks were broken and were put through the mill. Sand was used with the mortar—of that he was certain—but he did not know in what proportion. Brick rubbish was cheaper than sand. During the building, if they saw any room for improvement they would give effect to it. He would tell Mr. Pawley, the architect. By Mr. Gardiner: He had never been on a job of this magnitude before without a clerk of the works. There was such an official on Mr. Rickard's other job close by, but he could not say whether that would account for the bargeload of bricks being rejected.—The Coroner said the specification was inconsistent with Mr. Rickard building on his own account. Cross-examination continued: Had the pier been built on footings in the basement it would have been much stronger, and it would have been the ordinary way. With reference to the stanchion, no provision was made for it in the details, but it did appear in the original plan. The pier was never used for hoisting purposes. The inquiry was resumed on Thursday morning.

ALLEGED INFRINGEMENT OF ANCIENT LIGHTS IN WESTMINSTER.

THE case of Lawford *v.* the Army and Navy Stores, Limited, came before Mr. Justice Romer in the Chancery Division on the 6th inst., in which Mr. McNaughton, Q.C. (with him Mr. Horne), on behalf of the plaintiff, moved for an injunction to restrain the defendants from building so as to interfere with the lights to certain windows in flats in Francis-street, Westminster, of which the plaintiff was the mortgagee for 800*l.* Counsel said any interference with the property which would make it less valuable and less likely to let would be very serious to the plaintiff, as the property in question was leasehold.

Mr. Vernon Smith, Q.C. (with him Mr. F. H. Maugham), for the defendants, said he was willing, on behalf of the defendants, that the matter in dispute should be referred to an independent expert, and after some discussion his lordship directed that the matter should be referred to an independent expert to say whether or no there was any substantial damage to the plaintiff's windows, and if so whether he could suggest any and what modification.

Mr. McNaughton said that he had arranged with his learned friend on the other side that the names of three experts should be placed in a hat, and that the name of the one drawn out first should be the person to whom the matter should be referred.

IMPORTANT POINT UNDER THE LONDON BUILDING ACT, 1894.

THE case of Paynter *v.* Watson came before a Divisional Court of Queen's Bench composed of Justices Wills and Kennedy, on the 9th inst., by way of a special case stated by a Metropolitan Police Magistrate raising an undecided question under Section 43 of the London Building Act, 1894, as to the right of the owner of premises to rebuild them in a different manner to the old buildings without first obtaining the consent of the London County Council. The Section in question enacts "when any person intends to erect a domestic building. . . . . abutting upon a street on the site of domestic buildings existing at the commencement of this Act "(1) It shall be lawful for such person before commencing to erect the intended domestic building to cause to be prepared plans showing the extent of the previously existing domestic buildings in its several parts. . . . and to cause such plans to be submitted to the District Surveyor, who shall (if reasonably satisfied with the evidence of their accuracy) certify the same under his name, and such certificate shall be taken to be conclusive evidence of the correctness of the plan. Such person may then erect the intended domestic building, but so that no more land shall be occupied by the newly-erected building than was occupied by the previously existing domestic building as so certified. If such person fail to submit such plans to the District Surveyor, or the Tribunal of Appeal refuse to certify the accuracy of the same, such person shall on rebuilding be bound by the preceding provisions of this part of this Act.

"(2) If a person erecting the intended domestic building shall desire to deviate in any respect from the plan or plans certified by the District Surveyor, it shall be lawful for him to apply to the Council, who shall sanction such deviation on such conditions as they may think fit." The material facts were as follows:—The appellant was Major George Paynter, and the respondent the District Surveyor of the District of St. George's, Hanover-square North. The case was stated, on an appeal to the magistrate, from a notice of objection served by the District Surveyor under Section 150 of the Act. The appellant had served a building notice under Section 145 on the District Surveyor, and had annexed thereto the plans and sections of the new buildings which he proposed to erect on the site of Nos. 12 and 13, Grafton-street. These plans showed that the new buildings would not cover any ground that was uncovered before, but the arrangement of the upper floors was such that a certain amount of the old existing air space would be occupied by the new buildings, which were to be higher and to contain more cubic feet than the old. The magistrate found that the plans of the proposed new building did deviate in certain respects, and particularly in regard to the height, from the plans of the old buildings, and he held that the word "deviate" in section 43 (2) applied not only to the ground covered by the old buildings, but also to that of the buildings in respect to height, and width, and depth on the several floors, and he therefore affirmed the Surveyor's objection.

Mr. Macmorran, Q.C. (with him Mr. Poyser), on behalf of the appellant said the magistrate was wrong, and submitted that the owner was within his rights so long as he covered no more or different ground with the new buildings than the old

buildings covered. He did not contend that Section 43 gave an unqualified right to rebuild. It was only intended to give the rebuilder dispensation from the requirements of Section 41 (2) as to amount of air space to be left for the benefit of the neighbouring houses. The "plan" referred to in the Section meant only a ground plan. He referred to Section 47, and said that that would apply. The gist of the difficulty was that the appellant said he could build on the old area to any height subject to Section 47. The County Council, on the other hand, said that not only the ground area must be the same, but the cubic content.

Mr. Horace Avory (with him Mr. Daldy), for the respondent, pointed out that Part V. of the Act, in which part this group of sections was to be found, was headed "Open spaces about buildings and height of buildings." By Section 41 all new buildings were to have air space from the ground upwards. Under the law before this it was enough to have air space from the ceiling of the ground floor. As under the old law the ground floor did not necessarily have air space, it followed that if a person re-erecting old premises chose to build up straight above the ground floor, no air space would be left at all.

Mr. Justice Wills, in giving judgment, said that he had no doubt about the case. All depended on what was meant by "the plan showing the extent of the previous existing domestic building in its several parts" in section 41 (1). It would be the most extraordinary synonym for ground plans possible. If a person chose to rebuild an old house exactly as it was, he might get the protection of this section. The cardinal condition of the section was that no ground previously uncovered should be covered. But if a person desired to deviate in any respect, and that in one respect only, then he was subject to the jurisdiction of the County Council. He thought that the magistrate had come to a right conclusion, and that the appeal must be dismissed.

Mr. Justice Kennedy concurred.

STRANGE BUILDING DISPUTE AT EASTBOURNE.

A FARTHING DAMAGES AWARDED.

THE case of Baker *v.* Evershed was tried before Mr. Justice Kekewich in the Chancery Division on Tuesday and Wednesday. It was an action for a mandatory injunction to restrain defendants from permitting certain work to be done in front of the plaintiff's shop at Eastbourne, so as to overlap the plaintiff's premises. It appeared that the plaintiff was the owner in fee of No. 67, Terminus-road, Eastbourne, occupied by a Mr. Newbury, the defendants being jewellers, and occupiers of the adjoining premises, No. 65, Terminus-road. The plaintiff's case was that in April, 1897, a hoarding was put up in front of the defendants' shop, and when it was taken down the plaintiff discovered that the side of the shop next to his property had a pilaster with a bracket on top of it which encroached on his premises. The party-wall between the two properties had, up to the alterations, been treated as held in common—that was to say, the defendants were entitled to half of it and the plaintiff to the other half. When the pilaster and bracket were put up the plaintiff found they encroached to the extent of about $1\frac{1}{2}$ in. to $1\frac{3}{4}$ in. on his premises. The plaintiff alleged that 1 in. of frontage in Terminus-road was worth from 17*l.* to 18*l.*, and that it was important to him that he should bring the action, as he was meditating the alteration of his shop front in the same way as Messrs. Evershed had altered theirs. When the defendants' alteration came to the plaintiff's knowledge, he at once complained; but as they declined to make any difference in the projection, the present action was brought.

At the conclusion of the case, and after hearing evidence of a conflicting character, his lordship held that the defendants had committed a technical trespass, and awarded the plaintiff one farthing damages and no costs.

MEETINGS.

SATURDAY, MAY 14.

St. Paul's Ecclesiological Society.—Visit to the Church of Perivale, under the guidance of Mr. H. Roumieu Gough, and, if the weather be favourable, to the Church of Greenford.

MONDAY, MAY 16.

The Royal Institute of British Architects.—Mr. T. G. Jackson, R.A., on "The Libraries of the Middle Ages." 8 p.m.

Carpenters' Hall, London Wall (Free Lectures on Carpentry and Joinery).—Professor Banister Fletcher on "Temporary Structures, the Framing and Construction of Floors. Shoring." 7.30 p.m.

Society of Arts (Cantor Lectures).—Professor Carus Wilson on "Electric Traction." III.—8 p.m.

Surveyors' Institution.—Mr. H. T. Eve on "Compensation Values of Cattle Foods—Chemist *versus* Valuer."—8 p.m.

Liverpool Architectural Society.—The Annual General Meeting (1) Election of Officers and Council for the Fifty-first Session (2) Closing Address by the President, Mr. W. E. Willink, M.A. 6 p.m.

WEDNESDAY, MAY 18.

Architectural Association Discussion Section.—Mr. T. W. Aldwinckle, Jun., on "Recent Sanitary By-Laws."

British Archæological Association.—Mr. T. Cann Hughes, M.A., on "Gressingham Church, Lancashire." 8 p.m.

Society of Arts.—8 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of the members. 8 p.m.

Edinburgh Architectural Society.—Mr. A. Greig on "Church Decoration in Norfolk." 8 p.m.

THURSDAY, MAY 19.

Society for the Encouragement of the Fine Arts.—Dr. J. S. Phené, F.S.A., on "Pre-Roman Gold Work and Magnificent Pre-Roman Jewellery, Manufactured in the British Isles, in Pre-Historic Times." 8 p.m.

FRIDAY, MAY 20.

Architectural Association.—Mr. A. T. Walmisley on "Foundations as Applied to London Buildings and Riverside Foundations." 7.30 p.m.

SATURDAY, MAY 21.

Architectural Association.—Seventh Spring Visit, to Grove Hospital, Tooting. 3.30.

RECENT PATENTS:

ABSTRACTS OF ACCEPTED SPECIFICATIONS.

Open to opposition until June 20.

[1897] 3,736.—JOINTS OF EARTHENWARE OR OTHER PIPES: *J. Farley.*—To close a butt joint a loose abutment ring or collar is placed around the joint, and has its inner face formed with an annular groove to communicate with an opening formed in the abutment ring; upon the inner face of the latter is arranged a strip or ring of canvas cemented by its edges to the inner face of the abutment ring on each side of the groove. The canvas strip may be also fastened to the abutment ring by wire rings sprung into place or forced open by screw threads upon the two parts of the meeting ends of the ring and a nut to force them apart.

8,863.—SHARPENING SAWS: *R. Turnbull, sen. & R. Turnbull, jun.*—The claim is for feeding the saws up to revolving discs by hand in a to-and-fro motion; emery wheels or discs are slipped on the spindle and screwed up by a nut to keep them true; on the stand a table is placed in front of the wheels and raised above or below their centre to give the bevel to the saw-teeth; for hand and tenon saws three or more alternate teeth can be sharpened at one time, washers being placed between the discs to regulate them to the pitch of the teeth.

9,566.—TREATMENT OF SEWER AIR AND SEWAGE MATTER DURING TRANSIT IN DRAINS: *R. H. Reeves.*—Two vessels are fitted in an air-shaft, man-hole, &c., of a sewage or foul water drain, one vessel contains lime, lime-water, permanganate of potash, or lime mixed with gas-tar, the other contains sulphuric acid, which a sensitive tap allows to drip into a saucer and so become associated with the water of the lime from the other vessel issuing under pressure into the saucer; the vessels are placed on a shelf or rack, well up the man-hole shaft, and the overflow falls on to a series of porous or other pots: the water supply under the ordinary service mains is from branches, one of which is connected with a deep siphon whose legs are jointed up and provided with a sludge cap for clearing the bend of sediment; another branch pipe ends in a nozzle so arranged that the jet impinges against curved plates or discs, and is broken up into fine spray that acts as a cloud, and commingles with the vapour thrown off from the chemical body whilst agitated in the saucer and during the trickling down from the pots.

9,876.—CLEANING CHIMNEYS AND EXTINGUISHING FIRES THEREIN: *W. S. Frost.*—A compound of sulphur, saltpetre, charcoal, and salt, to which may be added sulphate of copper, nitrate of soda, carbonate of soda, and sulphate of zinc (all in named proportions), is held in a box attached to a rivetted holder, ignited, and held up a chimney or flue; it is claimed that the fumes will clear away all soot, immediately extinguish any chimney on fire, and obviate the necessity of sweeping.

10,459.—COATING COPPER OR COPPER ALLOYS WITH PATINA: *A. Lismann.*—The patina is artificially formed by electrolysis; the electrolyte consists of a liquid containing carbonates or compounds giving off carbonic acid under the influence of an electric current—natural mineral water makes a good electrolyte, provided it contains a minute percentage of carbonic acid in the form of lime and magnesia, and only a very small quantity of nitric acid and sulphate of lime; for bodies already *in situ* the cathode is placed as near as possible and the electrolyte is caused to slowly flow between the anode and cathode, or, for monuments, the cathode is placed at a suitable distance, the whole being surrounded by a water-tight fabric, and the electrolyte is slowly supplied and constantly renewed.

13,541.—DISINFECTING OR PERFUMING THE AIR OF WATER-CLOSETS, &c.: *J. A. Lippincott.*—The apparatus comprises a container for the disinfectant liquid, an atomiser fitted thereto for spraying purposes, and an air-pump, which is worked through a flexible tube, fastened to the door, so that by one movement—either opening or closing—of the door, air is passed through the atomiser, and sprays a quantity of the disinfectant or perfume into the air of the room.

14,357.—SAFETY CRANK FOR HOISTING CRANES: *R. Wolff.*—The crank is designed to allow the load to be lowered in two different ways, firstly by uncoupling the device by a short jerk on the crank, when the load will sink under a certain amount of friction, and, secondly, by following the sinking of the load by turning the crank backwardly: it combines a threaded crank axle—a toothed nut engaging the thread of the axle—a loose clutch socket, which carries the driving wheel, a loose toothed disc (*d*), a disc (*k*), a pawl engaging the teeth of disc (*d*), and a pawl engaging the teeth of the nut.

14,443.—JOINT OR STOPPER FOR SANITARY AND OTHER LIKE PIPES: *W. S. Emden & F. H. W. Higgins.*—The socket is lined with a bituminous composition (as in the Hassall & Stamford joints), grooves or spaces are cut therein, and on the raised portions thus left a thread is formed: on the spigot end is cast or moulded a corresponding outer lining, similarly grooved: in metal, concrete, and stoneware pipes the screwed projections may be cast in the sockets and on the spigots.

15,028.—DRAIN PIPES: *A. A. Wincott.*—To furnish means for directing a number of drains into a general manhole, although they may lead thereto at varying angles, the inventor places, at or near the entrance of the drain into the manhole, a bend pipe whose forward end engages and discharges itself into a shaped socket or collar in the manhole, its other end being connected to the drain in the usual manner: the bend pipe has a hole, covered by a cap, by which cleaning, &c., may be readily effected: the manhole bed is constructed of uniformly sized blocks having overlapping or rebating edges; some of the blocks are formed with outlet channels having upon their upper side the collars or sockets before-named with which the bend pipe is connected.

26,574A.—A SPADE: *The Rev. Dr. L Checkemian.*—The handle has a greater length, to save the labourer from stooping, and is fitted with a cross-piece (for the pressure of the foot) at a little distance above the blade; the blade, oval in shape, is pointed with a deep bevel and larger reach of bar.

30,144.—FLOORING OF STRENGTHENED BETON OR CONCRETE: *F. Hennebique.*—For floorings of beton strengthened with iron or the like the slabs, forming the ceiling and floor, are moulded at the workshop, and have their cores projecting in such a way as to be bedded in the beton of the joists moulded on the spot.

[1898] 3,690.—DRYING WOOD AND OTHER SUBSTANCES: *H. McPhail.*—Within the steam-jacketted chamber is a series of open-ended or perforated pipes, through which the superheated steam is supplied, arranged near the lower part of the drying chamber immediately beneath a perforated floor or partition; above the pipes is a pair of rails, upon which a waggon for carrying the timber to be dried can be run into and out of the chamber.

5,595.—LANTERNS FOR STREETS AND OTHER EXPOSED SITUATIONS: *J. H. Sheldrake.*—The lantern is constructed so that it may be readily put together and taken apart, the glasses being fixed without putty, &c. The glasses are trapezoidal, those for the lantern are put into place by insertion from within the lantern, to which they are secured by catches in the angle-posts, whilst the glass is fixed in the door before the door is fixed on its hinges.

6,146.—WINDOW-SASHES AND FRAMES: *J. A. Taylor & G. A. Brown.*—The sashes work freely in the grooves of the frames in the ordinary way, but instead of cords, pulleys, and weights, the inventors use metal plates or discs fastened at one end (of each plate) only, so that by tightening or loosening a regulating screw the necessary springy action is given to the plates, which thus press against the frame's inner surface.

5,787.—CHIMNEY TOP OR COWL: *J. Markham.*—To obviate down-draught the top or cowl is formed of (*a*) a chamber having openings that are provided with hoods, (*b*) deflector-plates, and (*c*) a cover. The deflector-plates are arranged vertically around the cover, which rests above the chamber on which are the hoods.

NEW APPLICATIONS.

For week ending April 30.

9,450, J. Morgan, Air Inlet for Sewer Ventilation. 9463-4, P. Naef, Smelting Ores, and Calcining Limestones, with Recovery of By-products. 9,470, A. S. Bower, Driving Motor-cars, &c., by Sprocket Wheels and Chains. 9,476, E. Graham, Wood Panels, Woodwork Boards, and all kinds of Materials suitable for Building and Decorating Purposes. 9,485, Scotts & Wilson, Implement for applying Paint or like substance. 9,493, F. E. Herdman, "Starting-boxes" or Combined Reostats and Automatic Cut-outs for Electric Motors. 9,500, England & Bousfield, and 9,784, T. A. Weston, Spanners and Wrenches. 9,501, Jessie E. Turner, Packings, Joint Washers, &c.: for Pipe, Manhole, and other Joints. 9,519, Dufour Frères, Pipes. 9,521, Ifleiderers, Water-waste Preventers, &c. 9525-6, F. Crisp, Fenders, Kerbs, and Stops. 9,548, P. Spies, and 9,607, T. S. Tschieret, Electric Arc Lamps. 9,555, Brown & Poulson, Moulding Machines. 9,561, Wharton & Preston, Chimney Pot. 9,562, D. Paterson, Adjustable Commode. 9,575, Walker & Hildred, Cranes and the like. 9,580, G. H. Jones, Combined Water Purifier and Filter. 9,601, J. S. MacCoy, Workmen's Time Recorders. 9,605-6, J. Fokchaner, Filters. 9,611, H. Kurtzig, Safety Device for Lifts. 9,628, E. Tyden, Water Filters, and for Accumulating and Cooling Filtered Water, and Scouring the Filter by Means of the Supply and Preventing Exhaustion of the Filter through the Supply Pipe. 9,632, Marchand & Perin, Converting Gypsum, &c., into Plaster of Paris. 9,635, Agnew & Flynn, Fire-hose Nozzles. 9,639, R. J. Eke, Blinds and Shutters. 9,641, J. W. Minto, Combined Cutting and Drilling Machine. 9,654, Jessie M. Wythes, Ash-pans. 9,660, D. W. Buchan, Air-tight Covers for the Cleaning or Inspection eyes of Soil-pipes, Drains, Traps, or Sewers. 9,661, F. Lobnitz, Breaking-up or Cutting Rocks, Boulders, Stones, or Earth. 9,677, Veritys & Ebbutt, Swing Joints or Ceiling Connections for Carrying Suspended Electric Light Fittings. 9,684, C. Leistner, for Using the rise and fall of the Tides to Produce Mechanical Power. 9,686, A. Baxendale, Chimney Pots, Ventilators, and the like. 9,695, J. Morel, Artificial Marble and other Translucent Artificial Products and Processes employed in their Production. 9,697, James Graham, Marquis of Graham, a Clinometer. 9,712, O. J. Lodge, Telephones, Circuits, and Relays. 9,714, G. F. Emery, Portable Electric Batteries and Electric Lamps. 9,728, L. Andrews, Electric Current Switch-Gear. 9,730, F. Henkel, Manufacture of Solid but easily soluble Alkaline Silicate. 9,737, C. H. Rott, for taking Flexible Moulds from Plastic Clay Models and Designs in Relief. 9,745, A. H. Penman, Supply of Gas to Buildings. 9,743, Holborows & Paice, Step Ladders. 9,767, D. Cameron and Others, Self-acting Valves for regulating the Discharge of Sewage into Tidal Waters. 9,782, J. E. Austin, Opening and Closing Hinged Sashes, Ventilators, and the like. 9,789, Hirst and Collins, Electroliers and Incandescence Electric Lamp Pendants. 9,799, Carter & Aynsley, "Cubicals" suitable for Baths and other places, and 9,800, means for Pivotting Doors. 9,820, A. Hawley, Windows. 9,829, J. Shields, Construction of Bridges, and the like. 9,834, Innes, Locks and Latches. 9,841, The Computing Scale Company, Price and Weight Scales. 9,852, J. Jarvis, Earthenware and Lead or other Metallic Joint for Earthenware Closet-pans. 9,869, W. Hewson, Nails. 9,874, W. Bryant, Kilns or Furnaces. 9,877, J. G. Dixon, Electric Switches. 9,888, W. M. Barger, Thresholds and Weather Strips therefor. 9,893, F. Safe, for Clearing Tramway Lines. 9,895, Davy & Thomas-Davies, Raising and Lowering Arc Lamps. 9,902, Farnhill & Leslie, Brushes, Brooms, Scrapers, or other Appliances for treating Surfaces. 9,929, Pusill & Featherby, for Tubing Artesian Wells. 9,934, Holden & Brooke, Plastic Compositions for Decorating Walls, Ceilings, and other Surfaces in Relief. 9,944, Semples, Automatic Window Sash Fasteners. 9,960, E. L. G. Cauro, Electric Meters. 9,965, C. Lincer, Water-sprinkling Devices for Extinguishing Fires. 9,968, J. H. Grell, Door Hinge with Lubricating Mechanism. 9,972, R. S. Norman Drawing Boards, &c.

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
Asylum Buildings, West Bangor, N.B.	Edinburgh District Lunacy Board	.....	June 30
*Exhibition Buildings	Glasgow International Exhibition	200, 150, and 100 guineas ..	Aug. 15

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered
Setts, Kerbs, Macadam, &c.	Bradbury & Romiley U.D.C.	J. W. Bain, School Brow, Bredbury	May 17
Reconstruction of Bridge over Towy, near Llandilo	G. W. R. Co.	Engineer, Neath Station..	do.
Four Cottages near Cross Keys Station Mon.	do.	Secretary, Paddington Station, W	do.
Rebuilding Athenæum Buildings, Fawcett-street, Sunderland	.....	J. Eltringham, Archt. 65, John-st. Sunderland	do.
Market Shed, Fish Quay, Low Lights, North Shields	Tynemouth Corp.	J. F. Swillie, Boro' Surv. Town Hall	do.
Store and Workshop, Factory-lane ..	Croydon T.C.	A. Broad, Archt. 22, George-st. Croydon . ..	do.
*Underground Conveniences	Corporation of London	The Engineer, Guildhall, E.C.	do.
*Kerbing, Channelling, &c. Hither Green-lane.....	Lewisham B. of W. ..	Surveyor's Dept. Town Hall, Catford, S.E.....	do.
*Kerbing, Channelling, &c. Panmure-road	do.	do.	do
*Pipe Sewers	Watford U.D.C.	Offices. 14, High-street, Watford	May 18
*Lime, Cement, and Granite.....	Mile End Old Town Vestry	J. M. Knight, Vestry Hall, Bancroft-road, Mile End-road, E.	do.
Lime, Tubes, and Bricks	Leeds Corp.	R. H. Townsley, Municipal-buildings, Leeds	do.
Cast Iron Pipes.....	Manchester Corp.	W. H. Talbot, Town Hall	do.
*Granite Macadam	Lymm U.D.C.....	M. Mort, Surv. Council Offices	do
Cottage, Standingstone, Broughton Moor, Cumberland.....	W. Mossop.....	Bowman Eilbeck, Standingstone	do.
Recreation Ground Works, Park-road, &c.....	Jarrow Corp.	Borough Surv. Grange-rd. Jarrow.....	May 19
Alterations, St. Peter's Hospital	Bristol Union	W. S. Skinner, Archt. 31a, Clare-street, Bristol	do.
*Portland Cement	Brighton Corp.	J. C. May, Town Hall, Brighton	May 20
Highway Improvements near Faceby Lodge	Stokesley R.D.C.	T. H. Walker, Engr. Northallerton	do.
Drill Hall and Gymnasium, Banstead, near Epsom	Kensington & Chelsea School Dist. Managers	C. Sharp, Archt. 59, Fenchurch-street, E.C.	do.
Cottage, Seapark, Kinloss, Elgin		C. C. Doig, Archt. Elgin..	do.
Two Shops, Moravian-road, Kingswood, Bristol		H. M. Bennett, Archt. 36, Corn-street, Bristol.. ..	May 21
*Jarrah Paving Blocks.....	Londonderry Bridge Commissioners.....	J. Stewart, 26, Shipquay-st. Londonderry	do.
Church, Moneyneany, nr. Londonderry	Rev. P. Grant.....	E. J. Toye, Archt. Strand, Derry	do.
Terrace of Houses, Berwick	.....	R. J. Atkinson, Berwick..	do.
Waterworks, Pipes, &c. Lasswade, nr. Bonnyrigg, N.B.....	.....	R. Little, C.E. 74, George-st. Edinburgh	do.
*Sewering, Levelling, &c. and Pipe Sewers, &c.....	Hornsey U.D.C.	E. J. Lovegrove, Offices, Southwood-lane, Highgate, N.	May 23
*Tree Gratings	do.	do.	do.
Electric Mains, &c.	Dublin Corp.	City Engineer, City Hall, Dublin.....	do.
Ten Houses, Derwent-avenue, Holbeck, Leeds	.....	City Engineer, Municipal-buildings	do.
Additions to Schools, Silverhill	Hastings School Bd. ..	Elworthy & Son, Archts. London-rd. St. Leonards	do.
Engine Shed, Shops, &c. Rose Grove..	Lancs. and Yorks. Ry. Co.	C. W. Bayley, Hunt's Bank, Manchester	May 24
Coastguard Buildings, Pennan, Aberdeenshire	Admiralty.....	Works Dept. Northumberland-avenue, W.C.	do.
Cast Iron and Stoneware Pipe Sewers, Oadby, nr. Leicester	Blaby R.D.C.	H. Walker, C.E. Angel-row, Nottingham	do.
Sewerage Works	Knutsford U.D.C.	W. J. Downes, Surv. Council Offices	do.
Additions to Convent, Bandon, co. Cork	.....	M. A. Hennessy, Archt. 74, South-mall, Cork	do.
Asylum Superstructure, Humberstone	Leicester Boro' Asylum Visitors	G. T. Hine, Archt. 35, Parliament-street, Westminster, S.W.	do.
Brick Culvert, Wakefield-road.....	Huddersfield Corp.....	Borough Surveyor, Town Hall	do.
*Repairing and Repointing Walls, &c..	Corporation of London	The Engineer, Guildhall, E.C.	do.
*Deals and Battens.....	Eton Union	The Clerk, Slough, Bucks.....	do.
Fittings in Store, &c. at Hospital	Metropolitan Asylums Board	A. H. Tiltman, 6, John-street, Bedford-row, W.C.	May 25

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
*Pipe Sewer	Greenwich B. of W. ..	141, Greenwich-road, S.E.	May 25
*Jangway at Workhouse.....	Shoreditch Guardians	G. J. Smith, 17B, Great George-street, S.W.	do
*Granite and Granite Chippings	Thame U.D.C.	J. Towers, Chinnor-road, Thame	do.
Surgery, Coach House, &c. Brunswick-street, Huddersfield	.. ..	J. Kirk & Sons, Archt. Huddersfield	do.
*Enlarging Post Office at Guildford	Commissioners H. M. Works		do.
Workhouse Buildings, Stow Hill	Newport (Mon) Union	Postmaster, Guildford.... B. Lawrence & Son, Archt. Dock-street, Newport ..	May 26
Electricity Supply Station	Darwen Corp.	Borough Engineer, Municipal Buildings	do.
*New Buildings and Alterations at Workhouse	Newport (Mon.) Union	B. Lawrence & Son, Dock-street, Newport..... ..	do.
*Materials for Erection of Isolation Hospital	Walthamstow U.D.C.	G. W. Holmes, Town Hall, Walthamstow	May 27
Residence, Hawes, Yorks	Windy Nook Co.-op. Soc. Ltd.....	J. P. Kay, Archt, 34, Prudential-buildings, Leeds	do.
Twelve Cottages, Coldwell-lane, Felling....	Sandbach U.D.C.	H. Miller, C.E. Wesley-terrace, Felling	do.
*Brick Depositing Tanks.....	Edinburgh and Leith Gas Comrs.....	W. Wyatt, Bryndwr, All Saints, Shrewsbury.....	do.
*Removal of Chimney	do.	W. R. Herring, Gas Works, New-street, Edinburgh ..	May 30
Cast Iron Pipes, &c.....	Walton-on-Naze U.D.C	do.	do.
Kerbing, Channelling, &c. Station-rd.	Alverstoke (Hants.) Union	H. W. Gladwell, Surv. Council Offices	May 31
Additions to Workhouse	Rev. M. B. Curry	H. F. A. Smith, Archt. Star-chmbrs. Gosport .	June 1
Church, Clonakeny, near Roscrea, Ireland	Eastbourne Gas Co. ..	W. G. Doolin, Archt. Dawson-chmbrs. Dublin	do.
*Gasholder Tank.....	Slough U.D.C.....	H. E. Jones, Harford-st. Stepney	June 4
*Making-up Streets	War Dept.	Surveyor, 11, Mackenzie-street, Slough	June 11
*Painting and Whitewashing, Woolwich	Sheffield Sch. Bd.	R. E. Office, Mill-lane, Woolwich	No date
Schools, Pomona-street	Mexborough Sch. Bd.	Holmes & Watson, Archt. Church-street, Sheffield	do.
Additions to Schools, Garden-street ..		G. White, Archt. Mexborough	do.
Alterations, &c. to House, Culdaremore Farm, Glenlyon, Perthshire	Sheriff M'Leod.....	Mackenzie & Co. 23, Queen-street, Edinburgh	do
House, Limithgow	Rev. A. W. Williamson	J. & E. Pearson, Archt. 24, Castle-street, Edinburgh	do.
House, Gullane, N.B.	Wirral Ry. Co.	do.	do.
Station Buildings, Hoylake	.....	W. M. Law, Surv. 3, Lord-street, Liverpool.... ..	do.
New Roads, Kirby Muxloe.....	.....	Miles & Beasley, Surv. Friar-lane, Leicester ..	do.
Additions to Methodist Chapel, Newbold	.....	W. Cecil Jackson, Archt. 29, Knifesmith-gate, Chesterfield	do.
Villas, Hasland, near Chesterfield....	.....	do.	do.
Wesleyan Chapel, Holbeach Marsh, Lincs.	.....	J. Curtis, Tea Mart, Holbeach	do.
Rebuilding Wellington Hotel, Wilson-street, Middlesbrough	.....	J. M. Bottomley, Archt 28, Albert-rd. Middlesbrough	do.
Drill Hall, Brynmawr	Bass & Co.	F. Baldwin, Archt. Brecon	do.
Seven Houses and Shops, Kirkstall-road	.....	T. Winn, Archt. 92, Albion-street, Leeds	do.
Alterations, Blue Bell Hotel, Glasshouse-street, Leeds.....	B. Greaves.....	do.	do.
Warehouse, Grace-street, Leeds	F. A. Cliff	do.	do.
Shoe Factory, Kirkstall-road, Leeds ..	Bainbridge & Co. Ltd.	Percy Robinson, Archt. 72, Albion-street, Leeds ..	do.
Houses and Shops, King-street, Cork	Dobbin, Ogilvie, & Co. Ltd.	A. Hill, Archt. 22, George's-street, Cork	do.
House, Oxton, Berwickshire.....	.....	J. & E. Pearson, Archt. 24 Castle-street, Edinburgh	do.
Fourteen Cottages and Five Houses, Hunslet, Leeds	.....	J. E. Leak, Archt. Hunslet	do.
Shop and Premises, High-street, King's Lynn.....	Mrs. Gates	L. F. Eagleton, Archt. Bank-chmbrs. King's Lynn	do.
*Warehouse	J. Cohen & Co.	C. H. Flack, 9, Bedford-road, W.C.	do.
*Superstructure of Buildings at Asylum	Leicester Borough Asylum	G. T. Hine, 35, Parliament-street, S.W.	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in.
*Deputy City Surveyor	Carlisle Corp.	150*l.* rising to 200*l.*.....	May 23
*Surveyor	Bexley U.D.C.....	200*l.* per annum	May 25

Those marked with an asterisk (*) are advertised in this Number. ***Competitions, p. iv. Contracts, pp. iv. vi. vii. & viii. Public Appointments, pp. xvi. & xvii.***

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

April 26.—By DILLEY & SON (at Thrapston).

Old Weston, Hunts.—"The Lodge Farm," 428 a. 1 r. 37 p., f. £4,500

April 27.—By F. DOD & CO. (at Ilford).

Ilford.—Netley-rd., &c., 26 plots of building land, f. 480

By Messrs. SPELMAN (at Norwich).

Norwich.—St. Giles'-st., "Cavendish House," f., r. 48*l.* 1,010

By MORRIS & PLACE (at Nottingham).

Nottingham.—Abbotsford-st., "The Adelphi Hotel," u.t. 82 yrs., g.r. 12*l.* 6s. .....
Denman-st., "The Sir Garnet Wolseley Hotel," u.t. 79 yrs., g.r. 20*l.* 10s. 6d. .....
St. Peter's Gate, "The Eight Bells Inn," f.
Angel-row, "The Bell Inn," f. 29,000
Beck-st., "The Beehive" p.-h., with houses and shops adjoining, u.t. 8 yrs., r. 28*l.*.....
Sussex-st., "The Harrington Arms," b.-h., u.t. 2 yrs., r. 12*l.* .....
20, Hunger Hill-rd., with off-license attached, u.t. 8 yrs., r. 45*l.* .....

By GLOVER & HOMEWOOD (at Gravesend).

Gravesend, Kent.—King-st., the site of St. Thomas' Almshouses, area 14,400 ft., f. 10,100

By THOMAS MARTIN (at Frome).

Frome, Somerset.—"The Critchill and Gibbet Hill Estate," area 24½ a., f. 2,875

Frome, &c., Somerset.—"The Clink Estate," area 62 a., f. £3,360

By PHILIP DAVIES (at Llanbadarn-fynydd).

Llanbadarn, Radnor.—"The Garn Farm," 102 a. 0 r. 6 p., f. 900
"The Vron Farm," 198 a. 2 r. 27 p., f. 1,550
"Esgairwyndwn Farm," 51 a. 3 r. 38 p., f. 670
Llanbister, Radnor.—Great and Little Moelfre Farms, 185 a. 3 r. 11 p., f. 1,970

April 28.—By DYER, SON, & HILTON.

Lee.—13, Belmont Pk., u.t. 54½ yrs., g.r. 14*l.* 520
Lewisham.—15, Walerand-rd., u.t. 37 yrs., g.r. 10*l.* 10s.. r. 55*l.* 350

By NEWBON, EDWARDS, & SHEPHARD.

Pimlico.—Lower Belgrave-st., &c., i.g.r. 130*l.*, u.t. 14 yrs., g.r. 36*l.* 1,100
Greenhithe, Kent.—Charles-st., f.g.r. 32*l.* 10s., reversion in 87 yrs..... 500
Stoke Newington.—19 and 25, Mildmay Pk., f., e.r. 110*l.* 1,830
Tottenham.—29, 30, 32, and 34, Henry-rd., u.t. 70½ yrs., g.r. 13*l.* 13s. 450
Barnsbury.—81, Richmond-rd., u.t. 52½ yrs., g.r. 4*l.*, r. 55*l.* 615
Canonbury.—86, Halton-rd., and "The Sussex Stables," u.t. 20½ yrs., g.r. 4*l.*, r. 55*l.* 340

By FAREBROTHER, ELLIS, & CO.

Holborn.—19, Red Lion-st., f., r. 90*l.* 1,930
Clapton.—112 and 114, Lower Clapton-rd., f., r. 105*l.* 1,610
Hendon.—Sunningfields-rd., "Martham Villa," and 1 a. 0 r. 36 p., f., e.r. 80*l.* 1,510
Wood Green.—88 and 92, Lordship-lane, f., e.r. 80*l.* £1,040
Hemel Hempstead, Herts.—"Hill House;" also a Cottage and 1 r. 18 p., f. 700
Llandogo, Mon.—"Pentwyn," and 20 p., f., e.r. 26*l.* 350

By C. C. & T. MOORE.

Tottenham.—69 to 87 (odd), Philip-lane; also l.g.r. 22*l.* 10s., u.t. 53 yrs., g.r. 50*l.* 1,550
Clapton.—45, Median-rd, u.t. 67 yrs., g.r. 7*l.*, r. 30*l.* 290
Commercial-rd. East.—36½, 37 to 43, 46, 47 and 48, Gower's-walk; and 3, 4 and 5, Webb's-pl., u.t. 11 yrs., g.r. 87*l.* 420
26 to 54 (even), and 49 and 51, Buross-st., u.t. 12 yrs., r. 175*l.*, r. 406*l.* 820
Hackney-rd..—78 to 108 (even), 73 to 79 (odd), Brunswick-st., and 51 to 69 (odd), Great Cambridge-st., u.t. 20½ yrs., g.r. 400*l.* 1,210
Mile End.—108 and 110, Canal-rd., u.t. 69 yrs., g.r. 7*l.* 10s. 515
46 and 48, Bridge-st., u.t. 75 yrs., g.r. 5*l.* 360
Bethnal Green.—6, Church-row, f., r. 29*l.* 18s..... 355
Poplar.—46, Pennyfields, f., r. 25*l.* 320
37 and 38, Wade-st., f., r. 49*l.* 8s..... 470
Shadwell.—214, High-st., r. 40*l.*; also l.g.r. 2*l.*, u.t. 13 yrs., g.r. 13*l.* 110
Limehouse.—4, Beccles-st., f..... 300

By J. A. & W. THARP.

Leyton.—27, 29, and 31, Etchingham-rd., u.t. 82 yrs., g.r. 11*l.* 5s..... 480
Stratford.—24 to 30 (even), Manby-rd., u.t. 80 yrs., g.r. 14*l.* 555

Forest Gate.—139 and 141, Station-rd., f., r. 57*l.* 4*s.* £615
Plaistow.—17 to 29 (odd), St. Mary's-rd., u.t. 68 yrs., g.r. 28*l.* 775
West Ham.—70, 72, 86, and 88, Gladstone-rd., f. 1,010
By STIMSON & SONS.
Newington.—131 and 133, Newington Causeway, u.t. 56 yrs., g.r. 140*l.*, r. 500*l.* 3,400
Catford.—Perry Hill, "Perry Hill House," and about half an acre, f. 1,050
43 and 45, Englehart-rd., f. 600
Peckham.—188, High-st., f., r. 60*l.* 950
1 to 7, Nungate cottages, f. 990
New Cross.—1 to 8, Glenville-grove, u.t. 78 yrs., g.r. 5*l.* 780
Lee.—99, High-rd., u.t. 54 yrs., g.r. 2*l.*, r. 36*l.* 440
Sydenham.—162 and 164, Sydenham-rd., u.t. 68¾ yrs., g.r. 18*l.*, r. 77*l.* 880
Rotherhithe.—55, Paradise-st., f., r. 31*l.* 4*s.* 340
Bermondsey.—28, Vienna-rd., u.t. 25 yrs., g.r. 2*l.* 18*s.* 9*d.* 160
Mottingham, Kent.—High-rd., "Devonshire Villa" and "Sidmouth Villa," u.t. 71 yrs., g.r. 16*l.*, r. 80*l.* 575
Orpington, Kent.—Wellington-rd., a freehold house and plot of land, r. 25*l.* 310
Teddington.—Manor-rd., "The Orleans Boat House," and "Limes Villa," u.t. 80 yrs., g.r. 30*l.* 1,500
By NIGHTINGALE, PHILLIPS, & PAGE (at Kingston).
Kingston, Surrey.—Birkenhead-av., "Brooklands," u.t. 85 yrs., g.r. 10*l.* 10*s.*, e.r. 45*l.* 300
By STEPHENSON & ALEXANDER (at Caerphilly).
Caerphilly, Glamorgan.—Castle-st., Three Freehold shops and premises 2,600
By CHARLES COOPER (at Bruton).
North Brewham, Somerset.—"Goodedge Farm," area about 195 a., f. 4,000
By COOPER & WACHER (at Margate).
Broadstairs (near), Kent.—"Joss Farm," 114 a. 1 r. 28 p., f. 11,400
A plot of building land, 2 a. 0 r. 32 p., f. 1,000
An enclosure of land, 4 a. 0 r. 13 p., f. 1,160
Reading-st., two freehold cottages, r. 18*l.* 760
By WARNER, SHEPPARD, & WADE (at Rugby).
Shardlow, Derby.—"The Dog and Duck" p.-h., and 5 a. 0 r. 11 p., f. 2,000
Two freehold cottages, r. 19*l.* 10*s.* 390
"Union" and "Windmill" Flats, 13 a. 3 r. 15 p., f. 1,300
A freehold farmhouse and 23 a. 2 r. 24 p. 1,000
A freehold residence and 3 a. 1 r. 13 p. 1,375
Three enclosures of land, 12 a. 1 r. 17 p., f. 1,130
House, blacksmith's shop, cottage and 5 a. 0 r. 18 p., f. 800
"Ambaston Fields," also six cottages, area 55 a. 0 r. 10 p., f. 2,937
Wilne, Derby.—"Wilne Meadows," area 20 a., f. 800
A freehold house, cottage, and 10 a. 3 r. 30 p. .. 620
Castle Donington, Leicester.—"Tipnall Meadows," 19 a. 3 r. 6 p., f. 1,150
A freehold farm, two houses, and 78 a. 0 r. 36 p. 3,800
By WORSFOLD & HAYWARD (at Dover).
Dover.—Stroud-st., "The Royal Mail Hotel," u.t. 72 yrs., g.r. 8*l.*, r. 65*l.* 2,500
3 and 4, York-ter., f., r. 30*l.* 515
3, Golden Cross-cottages, f. 170
18, Hawkesbury-st., u.t. 28 yrs., g.r. 6*s.*, r. 18*l.* 175
1 to 4, Elsam's-cottages, u.t. 23 yrs., g.r. 4*l.* 15*s.* 355
2 and 3, Blenheim-sq., f., r. 46*l.* 755
5, Tower Hamlets-st., f. 135
By W. R. NICHOLAS & Co. (at Reading).
Hare Hatch, Berks.—The Holt, seven cottages, f., r. 47*l.* 405
Crazies Hill, four cottages, f. and c., r. 26*l.* 305
Hambledon, Bucks.—Four plots of building land, 6 a. 3 r. 31 p., f. 300
By G. E. JENKIN (at Penzance).
Kelynack, Cornwall.—"Kelynack Estate," area about 283 a., f. and lifehold 11,500
By LANGRIDGE & FREEMAN (at Maidstone).
West Malling, Kent.—Five building plots, f. 400
April 29.—By BUNCH & DUKE.
Hackney.—9, 11, 11A, 13 to 23 (odd), Clarence-rd.; 1 to 8, Clarence-ter.; 1 to 7, Clarence-cottages: 1 to 15 (odd), 2 and 4, Orchard-pl.; u.t. 40½ and 10½ yrs., g.r. 123*l.* 4,530
1 to 4, Grove-cottages (site of), f. 525
By BAKER & SONS.
Edgware, Middx.—Hale-lane, a Block of Building Land, area 11 a. 1r. 12 p. 1,260
By FRANCIS DOD & Co.
Merton.—108 and 110, High-st., f., r. 60*l.* 590
By FIELD & SONS.
Lambeth.—1 and 2, Wootton-ter., and l.g.r. 15*l.*, u.t. 14 yrs., g.r. 13*l.* 180
Rotherhithe.—23, 25 and 27, Verney-rd., u.t. 79 yrs., g.r. 15*l.* 430
By MARTIN CLARKE & Co.
Notting Hill.—1, Chichester-rd., u.t. 42 yrs., g.r. 7*l.* 10*s.*, r. 40*l.* 275
22, Chichester-rd., u.t. 68½ yrs., g.r. 9*l.*, r. 57*l.* 4*s.* 355
Westbourne Park.—48, Acklam-rd., u.t. 68 yrs., g.r. 8*l.*, e.r. 45*l.* 325
Wandsworth.—86, Ferrier-st., u.t. 79 yrs., g.r. nil, r. 26*l.* 200
Holloway.—65 and 69, Tollington-pk., u.t. 67 yrs., g.r. 20*l.*, r. 100*l.* 855
Tottenham.—10 and 12, Osman-rd., u.t. 78½ yrs., g.r. 7*l.* 175
By PROTHEROE & MORRIS.
Leyton.—Church-rd., The "Odessa Nursery," area 3 a., 1 r. 17 p., f. 1,550
Ponder's End.—Scotland Green-road, "Fuller House" and 1 a. 3 r. 37 p., f., e.r, 100*l.* 1,000
Scotland Green-rd.—Two freehold cottages 530
Scotland Green-rd.—Two blocks of land, 3 a. 1 r. 23 p., f. 1,660
Napier-rd.—A block of land, 2 r. 25 p., f. 130

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G.	ton	8/0/0 0/0/0
Teak, E.I.	load	9/0/0 14/0/0
Sequoia, U.S.ft.cu.		1/9/0 1/11/0
Ash, Canada, load		3/5/0 4/10/0
Birch, do.		2/16/0 4/7/6
Elm, do.		4/0/0 5/0/0
Fir, Dantsic, &c.		1/4/0 3/4/0
Oak, do.		2/2/0 3/2/0
Canada		3/15/0 5/0/0
Pine, Canada red		0/0/0 0/0/0
Do. yellow		2/5/0 4/5/0
Lath, Dantsic, fath		4/10/0 5/10/0
St. Petersburg		5/0/0 6/10/0
Wainscot, Riga, &c., log		5/0/0 6/10/0
Odessa, crown		3/15/0 5/10/0
Deals, Finland 2nd & 1st std 100		8/5/0 8/15/0
Do. 4th & 3rd		8/5/0 8/15/0
Do. Riga		6/15/0 7/15/0
St. Petersburg, 1st yellow		10/5/0 12/15/0
Do. 2nd yellow.		9/5/0 10/15/0
Do. white		8/15/0 10/15/0
Swedish		9/5/0 15/15/0
White Sea		9/15/0 16/5/0
Canada, Pine 1st		19/5/0 25/5/0
Do. do. 2nd		13/15/0 16/5/0
Do. do. 3rd, &c.		6/5/0 9/15/0
Do. Spruce, 1st		10/10/0 12/0/0
Do. do. 3rd and 2nd		8/0/0 9/0/0
New Brunswick		7/0/0 8/0/0
Battens all kinds		5/0/0 18/0/0
Flooring boards, sq., 1 in. prep. 1st		9/6 17/9
Do. 2nd		8/0 13/6
Other qualities		6/0 7/0
Cedar, Cuba, ft.		/4 /4½
Honduras, &c.		/3½ /4½
Mahogany, Cuba		/5½ /7
St. Domingo, cargo av.		/4½ 0/1/3
Mexican, do. do.		/3½ /4
Tobasco, do. do.		/4 /6½
Honduras, do.		/4 /6
Box, Turkey, ton		4/0/0 15/0/0
Rose, Rio		7/0/0 14/0/0
Bahia		6/0 0 12/0/0
Satin, St. Doming.		0/0/5 0/1/0

TIMBER *(continued)*.		
Satin, Porto Rico		0/0/6 0/1/6
Walnut, Italian		0/0/3 0/0/7
METALS.		
Iron—Pig, in Scotland	ton	2/6/10 0/0/0
Bar, Welsh, in London		5/15/0 5/17/6
Do. do. at works in Wales		5/10/0 5/12/6
Do. Staffordshire, in London		6/5/0 7/10/0
COPPER—British cake and ingot		55/5/0 56/0/0
Best selected		56/0/0 56/10/0
Sheets, strong		61/0/0 62/0/0
Chili bars		51/2/6 0/0/0
YELLOW MTL. lb.		5d. 5½d.
LEAD—Pig		
Spanish	ton	14/5/0 0/0/0
English com. bands		14/10/0 0/0/0
Sheet, English 6 lbs. per sq. ft. and upwards		15/10/0 0/0/0
Pipe		16/0/0 0/0/0
ZINC—English sheet	ton	23/0/0 0/0/0
Vieille Montagne		23/10/0 0/0/0
Spelter		19/2/6 19/7/6
TIN—Straits		65/15/0 0/0/0
Australian		66/3/9 66/10/0
English Ingots		68/10/0 69/10/0
Banca		61/0/0 0/0/0
Billiton		59/15/0 60/0/0
OILS.		
Linseed	ton	16/17/6 0/0/0
Cocoanut, Cochin		27/15/0 0/0/0
Do. Ceylon		22/0/0 0/0/0
Palm, Lagos		21/15/0 0/0/0
Rapeseed, English pale		27/10/0 0/0/0
Do. Brown		26/0/0 0/0/0
Cottonseed ref.		14/5/0 15/5/0
Oleine		13/10/0 14/10/0
Lubricating U.S.		0/5/3 0/7/6
Do. Black		0/5/0 0/6/6
TAR—Stockholm	barrel	1/5/0 0/0/0
Archangel		0/12/6 0/0/0
Turpentine		26/0/0 0 0/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

BARNES.—For building and finishing the south aisle porch, organ chamber, and vestries of the Church of SS. Michael and All Angels, Barnes, Surrey. Messrs. Tress & Innes, architects, 27, Queen-street, City, E.C.:—

T. Gregory & Co.	£1,840 0	S. W. Aries & Co.	£1,751 6
Dove Bros.	1,825 0	Colls & Sons	1,693 0
Prestige & Co.	1,790 0	Arthur Sale	1,680 0
Balaam Bros.	1,770 0	Adamson & Sons	1,634 0

CAMBORNE (Cornwall).—For the erection of United Methodist Free Church, Barripper. Mr. Sampson Hill, architect, Greenlane, Redruth:—

J. Barbery & Haslitt	£695	J. Berryman	£630
E. Pooley	678	W. C. Hodge	606
T. Haslitt & Mills	647	Mills & Moffatt	595
F. Mitchell	640	Jno. White, Camborne*	580
W. H. Moyle	630	* Accepted.	

CHESHUNT (Herts).—For the erection of lodge, for Mr. E. Debenham:—

Matthews	£597 15 0	W. Lawrence, Waltham Abbey (accepted)	£511 0 0
Archer	529 11 6		

ENDERBY (Leicestershire).—For the rebuilding of the "Havelock Arms," for Messrs. Brunt, Bucknall, & Co., brewers. Messrs. Miles & Beasley, architects, Friar-lane, Leicester. Quantities by architects:—

J. Wright	£841	U. Gurney	£753
S. Briers	825	Langton & Son, Enderby*	738
* Accepted.			

FARNHAM.—For the erection of four cottages at South View, Farnham, for Mrs. Kelly. Mr. J. Alfred Eggar, architect, 11, West-street, Farnham:—

James Kimber	£1,330 10	Crosby & Co.*	£1,198 0
A. J. Figg	1,320 0	* Accepted.	
[All of Farnham.]			

ILKLEY.—For the erection of a pair of villa residences. Messrs. Isitt, Adkin, & Hill, architects, Prudential Buildings, Bradford:—

Masonry.—W. Plows, Middleton-terrace, Ilkley	£1,025	0	0	
Joinery.—J. Deacon, Wharf-street, Shipley	470	0	0	
Plumbing.—T. Nunwick, Manningham-lane, Bradford	285	0	0	
Slating.—J. Smithies, Great Horton-lane, Bradford	102	10	0	
Plastering.—O. Lister, Poplar-grove, Ilkley	161	8	4	
Painting.—G. J. Walton, Great Horton-road, Bradford	25	6	0	

IPSWICH.—For structural alteration and erecting shop front, Carr-street. Mr. Geo. Wm. Leighton, architect, 6, Princes-street, Ipswich:—

F. Bennett	£436	W. Johns, jun.	£418
R. Girling	430	G. L. Friend*	327
For the Plumbing, Drainage, and Decoration.			
Steam & Son	£84	G. L. Friend*	£69
J. Day	83	* Accepted.	

LONDON.—For the erection of three cottages, Markfield-road, Tottenham. Messrs. Crawters, architects:—

Gavey	£819	W. Lawrence, Waltham Abbey*	£738
Norris	795		
Stewart	768	* Accepted.	

LONDON.—For six shops and stables, Romford-road, Manor Park, for Mr. J. Tyrrell. Mr. R. Banks Martin, architect, 103, Plashet-grove, East Ham, and East-street, Barking:—

J. G. Horlock	£5,550	C. Lawrence (accepted)	£5,200

LONDON.—For five houses, Barking-road, East Ham, for Mr. G. Batt. Mr. R. Banks Martin, architect, 103, Plashet-grove, East Ham:—

W. J. Stillwell	£2,777	C. Lawrence	£2,441
Fox & Sons	2,742	B. Selby	2,367
H. Jackson	2,698	C. Manning	2,150
R. J. Goodey	2,500	A. Timson*	2,050
J. G. Horlock	2,475	* Accepted.	

LONDON.—For five houses, Beckton-road, Canning Town, for Mr. H. Drake. Mr. R. Banks Martin, architect, 103, Plashet-grove, East Ham, and East-street, Barking:—

W. J. Maddison	£1,900	C. Lawrence	£1,600
J. G. Horlock	1,775	C. Manning (accepted)	1,445

LONDON.—For various decorative and sanitary works, 23 and 48, Nevern-square, Earl's Court, South Kensington. Messrs. Morley & Letts, surveyors, 185, Earl's Court-road, S.W.:—

Lole & Lightfoot	£447	H. Oldrey, West Kensington-park	£345
James Whitaker	390		
F. Holdstock	380		

LONDON.—For decorative repairs and sanitation, 4, Nevern-square, Earl's Court, South Kensington. Messrs. Morley & Letts, surveyors, 185, Earl's Court-road, S.W.:—

J. Rugg & Son	£145	J. Whitaker, 191, Earl's Court-road (accepted)	£135
F. Holdstock	138		

LONDON.—For sundry alterations and decorative repairs to No. 83, Westbourne-grove, W., for Mr. Stuart S. Samuel. Mr. Percy L. Marks, architect:—

Mansfield & Son	£487 0 0	Callow & Wright*	£437 2
A. V. Paddison	448 17 0		
* Accepted subject to arrangement.			

LONDON.—For fireproof flooring and staircase, Jasper House, Earl's Court-road, South Kensington, in accordance with requirements of London County Council. Messrs. Morley & Letts, surveyors, 185, Earl's Court-road, S.W.:—
Lole & Lightfoot, Chelsea £225

LONDON.—For sundry decorations, hot-water fittings, and electric-light installations, 63, Earl's Court-square, S.W. Messrs. Morley & Letts, surveyors, 185, Earl's Court-road:—

Lole & Lightfoot	£356	H. Smith & Son	£289
F. Holdstock	318	J. Whitaker, Earl's-court*	275
* Accepted.			

LONDON.—For constructing the foundations of the Head Offices of the Metropolitan Asylums Board, Victoria Embankment. Mr. Edwin T. Hall, architect, 57, Moorgate-street, E.C.:—

Clift Ford	£6,871	Spencer, Santo, & Co.	£4,993
H. J. Williams	5,987	Foster & Dicksee	4,750
John Shillitoe & Son	5,200	Henry Lovatt	4,535
Lawrence & Son	5,059	Leslie & Co. (accepted)	4,386

LONDON.—For the erection of printing premises, Cross Keys-court, for Mr. G. J. Mathieson. Messrs. Barnes-Williams, Ford, & Griffin, architects:—

Holloway Bros.	£7,340	Lascelles & Co.	£6,925
Colls & Sons	7,140	W. Downs	6,799
J. Greenwood	7,120	Batley Sons & Holness	6,687
H. J. Williams	6,985	Falkner & Sons*	6,483
Higgs & Hill	6,940	H. L. Holloway	6,394
Smith & Sons	6,937	* Accepted.	

LONDON.—For addition to premises, City-road, for Messrs. Betts & Co., Ltd. Messrs. Barnes-Williams, Ford, & Griffin, architects:—

G. Potton & Sons	£3,020	Lawrance & Sons*	£2,375
Falkner & Sons	2,693	* Accepted.	

LONDON.—For alterations, &c., at No. 21, Harrington-road, South Kensington, S.W., for Mr. Henry Bullingham. Mr. Edward Monson, architect, Acton-vale, W., and 22, Buckingham-street, Adelphi, W.C.:—

G. Lyford	£1,320	Oldrey & Sons, Kilburn, N.W. (accepted)	£945
W. Watson	1,187		
Godson & Sons	1,076		

LONDON.—For alterations, additions, and fittings at the "Carlisle Tavern" public-house, Mostyn-road, Bow, E., for Mr. E. Eldridge. Mr. Fred. A. Ashton, architect, 177, Romford-road, Stratford, E.:—

	Alterations.	Fittings.	Total.
R. E. Williams & Sons	£1,596	£850	£2,446
H. Wall & Co.	1,455	840	2,295
A. E. Symes	1,390	779	2,169
T. & H. Cocks (accepted)	1,393	750	2,143

LOWESTOFT.—For supplying and fixing heating apparatus and boiler, &c., at the technical schools, for the Corporation. Mr. Geo. Wm. Leighton, architect, Ipswich:—

Rosser & Russell	£395	J. W. Brooke & Co., Ltd., Lowestoft (accepted)	£392
Strode & Co.	372		

MITCHAM.—For pulling down and rebuilding the Buck's Head, Mitcham, for Hoares Brewery Company. Messrs. Perry & Read, architects, John-street, Adelphi, Strand. Quantities supplied:—

Hall, Bedall & Co.	£8,422	Simpson & Cove	£8,105
Clarke & Bracey	8,295	Knight & Co.	7,930
Perry & Co.	8,171		

RAMSGATE.—For the erection of twelve almshouses, &c., The Elms, for the Vicar and Churchwardens of St. George's parish (the trustees under the will of the late Mrs. Barber). Messrs. W. G. Osborne and Langham & Cole, joint architects, Ramsgate. Quantities by the architects:—

R. Stock	£5,125	W. W. Martin	£4,852
J. W. Woodhall	5,075	J. Wise	4,750
T. May	5,004	J. H. Forwalk, Ramsgate*	3,855
E. Padgett	5,003	* Accepted.	

ROTHWELL HAIGH.—Accepted for pulling down and rebuilding the "Old Half-way House Hotel" premises, together with coachhouse, stabling, and cycle sheds thereto at Robin Hood, Rothwell Haigh, for the City Brewery Co., Limited, Leeds. Mr. Thomas Winn, architect, Leeds:—

Bricklaying and Masonry.—Binks Bros., Outwood, near Wakefield	£4,032 25
Carpentry and Joinery.—W. A. Millard, St. Columbia-street, Leeds	
Plumbing and Glazing.—J. E. Bedford, Chapel Allerton, Leeds	
Plastering.—A. & S. Wheater, Calverley, near Leeds	
Painting.—J. Snowden & Sons, Ossett	
Slating.—Jas. Season, Hunslet-road, Leeds	
Iron foundery.—Newsome & Askham, Dewsbury	

ROTHWELL (Northants).—For sewering, paving, &c., Evison-road, for the Urban District Council. Mr. W. T. Pearson, surveyor, Market House, Rothwell:—

J. Buckby	£339 10	W. G. Willmott, Rushden R.S.O.*	£287 0
A. Barlow	308 0	* Accepted.	

SOUTHEND-ON-SEA.—Accepted for the erection of twelve semi-detached villas for Mr. T. H. Batstone. Mr. H. J. Stevens, architect and surveyor, 16, Craven-street, Strand, W.C.:—
Smith & Sons £5,798

ULVERSTON.—For the construction of sewers, sewage-tank, &c., Leece, for the Ulverston Rural District Council. Mr. J. Greenwood, Surveyor, Union Offices, Ulverston:—
T. & W. Dirkin, Louna-road, Kendal, Westmorland £529 10

WEDNESFIELD.—For the execution of sewerage works, &c., or the Urban District Council. Mr. R. E. W. Berrington, engineer, 1, 2, and 3, Bank-buildings, Lichfield-street, Wolverhampton:—

Jas. Mackay	£9,417	Jas. Owens	£6,399
Currall, Lewis, & Martin	8,934	Ford & Hudson	6,198
Geo. Law	8,600	H. Holloway, Wolverhampton*	5,920
J. Biggs	7,290		
H. Weldon	6,414		

* Accepted.
[Engineer's estimate, £6,000.]

WOLDINGHAM. — For the erection of cottage residence. Messrs. Barnes-Williams, Ford, & Griffin, architects:—

Batley, Sons, & Holness	£867	A. B. Chirgwin*	£777
J. L. Millner	850	T. E. Dives	765

* Accepted.

LONDON SCHOOL BOARD TENDERS.

At the last meeting of the London School Board, the Works Committee submitted the following lists of tenders:—

HALFORD-ROAD.—Erecting manual training centre:—

McCormick & Sons	£999	R. A. Yerbury & Sons	£830
J. Garrett & Son	880	E. Triggs*	825
H. Knight & Son	852		

"MICHAEL FARADAY."—Adapting No. 97, Thurlow-street, for a schoolkeeper's residence:—

Johnson & Co.	£225 0	J. F. Ford	£149 0
Frampton & Co.	195 0	E. B. Tucker	140 0
Rice & Son	183 0	H. Line	137 10
T. Hooper & Son	177 0	J. Marsland*	136 0
H. J. Williams	160 0		

NICHOL-STREET.—Re-building the boys' offices, and two offices for girls; extending and refitting the infants' offices in playground; reconstructing the infants' and girls' offices on roof playgrounds; erecting covered playground for boys; enlarging the schoolkeepers' house; providing drainage scheme and enclosing, draining, and tar-paving additional land:—

Samuel Mason, Ltd.	£5,492 9 2	Lathey Bros.	£4,379 0 0
Johnson & Co.	4,902 0 0	Grover & Son	4,347 0 0
G. S. S. Williams & Son	4,685 0 0	W. Akers & Co.	4,271 0 0
R. A. Yerbury & Sons	4,430 0 0	E. Lawrance & Sons	4,217 0 0
G. Parker	4,428 0 0	E. Triggs*	4,119 0 0

"PARAGON."—New school—boys, 352; girls, 352; infants, 407. Total, 1,111, with schoolkeeper's house, cookery, laundry, and manual training centres:—

Perry & Co.	£29,776	J. & M. Patrick	£26,898
F. & H. F. Higgs	29,463	R. A. Yerbury & Sons	26,445
Kirk & Randall	28 998	Lathey Bros.	26,332
B. E. Nightingale	28,883	Treasure & Son	25,788
J. Carmichael	28,773	S. Hart	25,749
J. Grover & Son	28,535	Stimpson & Co.*	24,862
E. Lawrance & Sons	28,445		

* Recommended for acceptance.

PAINTING the exteriors of the following schools:—

ALBION-STREET:—

Johnson & Co.	£167	Rice & Son	£98
H. Line	119	E. Triggs	58
A. White & Co.	115	Marchant & Hirst	57
G. Brittain	107	E. Proctor*	60

CHARING CROSS-ROAD:—

W. Whiteley	£98 5	W. Hornett	£35 0
W. Brown	98 0	B. E. Nightingale	71 0
Lathey Bros.	96 0	W. Chappell	58 10
F. G. Minter	90 0	E. B. Tucker*	53 0
T. Nicholson	90 1		

FINSBURY ("Whittington"):—

McCormick & Sons	£138	Stevens Bros.*	£114
Gardner & Hazell	134		

"MOBERLY" (late Harrow-road).—

G. H. Sealey	£255 0	F. T. Chinchen	£125 0 0
F. Chidley	149 18	W. Whiteley	1 9 8 6
C. Gurling	142 15	Bristow & Eatwell*	73 4 0
Marchant & Hirst	132 0		

OLD WOOLWICH-ROAD:—

Thomas & Edge	£163 0 0	C. S. Jones	£119 0 0
C. Foreman	155 0 0	C. G. Jones	98 0 0
W. Banks	119 18 6	E. Proctor*	70 0 0

"PULTENEY"—

W. Hornett	£195	Lilly & Lilly, Ltd.	£145
W. Brown	190	F. G. Minter	139
Lathey Bros.	159	W. Chappell	125
E. B. Tucker	156	B. E. Nightingale*	110
T. Nicholson	148		

REDDINS-ROAD:—

Jones & Groves	£237 10 0	G. Kemp	£155 0 0
Star & Son	236 5 6	H. Line	151 0 0
Frampton & Co.	215 0 0	Rice & Son	150 17 6
J. Garrett & Son	206 0 0	W. Akers & Co.*	147 0 0
J. F. Ford	177 0 0		

RUSHMORE-ROAD:—

F. Britton	£301 0	McCormick & Sons	£242 0
Unsigned	299 0	Steven Bros.	214 10
G. Wales	259 17	S. H. Corfield	211 0
W. Silk & Son	245 0	G. Barker*	204 0

THOMAS-STREET:—

Johnson & Co.	£239 0	A. White & Co.	£150 0
J. F. Holliday	215 0	D. Gibb & Co.	149 0
A. W. Derby	189 0	S. H. Corfield*	125 0
J. T. Robey	155 15		

WENLOCK-ROAD:—

Chase & Son	£710 0	W. H. Wagstaff & Sons	£243 0
J. Morrison	309 0	F. Britton	238 0
J. Kybett	258 0	J. Grover & Son*	231 10
E. Lawrance & Sons	245 0		

WILMOT-STREET:—

J. T. Robey	£271	J. Kybett	£214
F. Britton	225	D. Gibb & Co.	182
A. E. Symes	225	Collis Willmot	178

* Accepted.

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S. W. (Amounts should have been stated).

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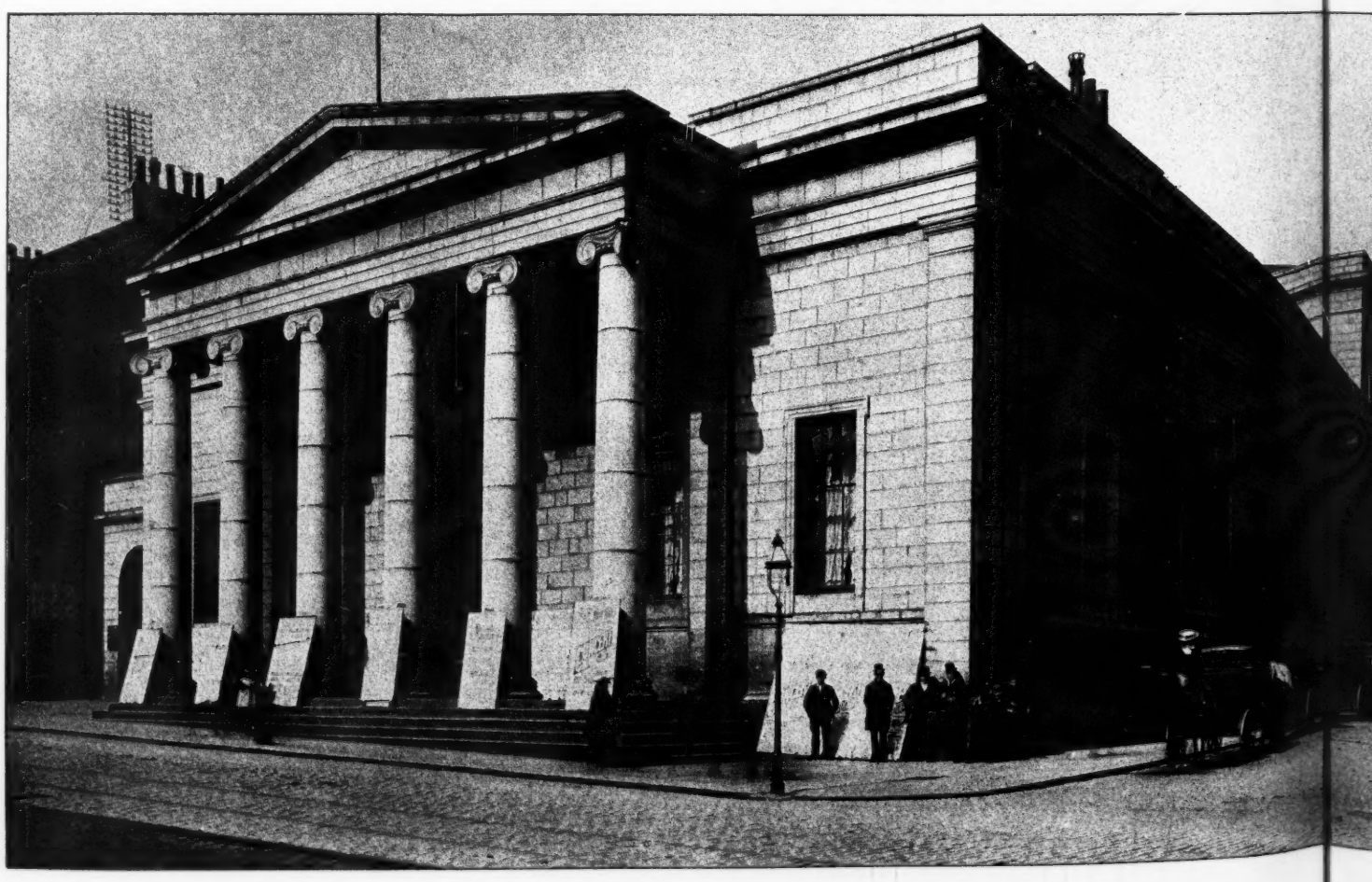

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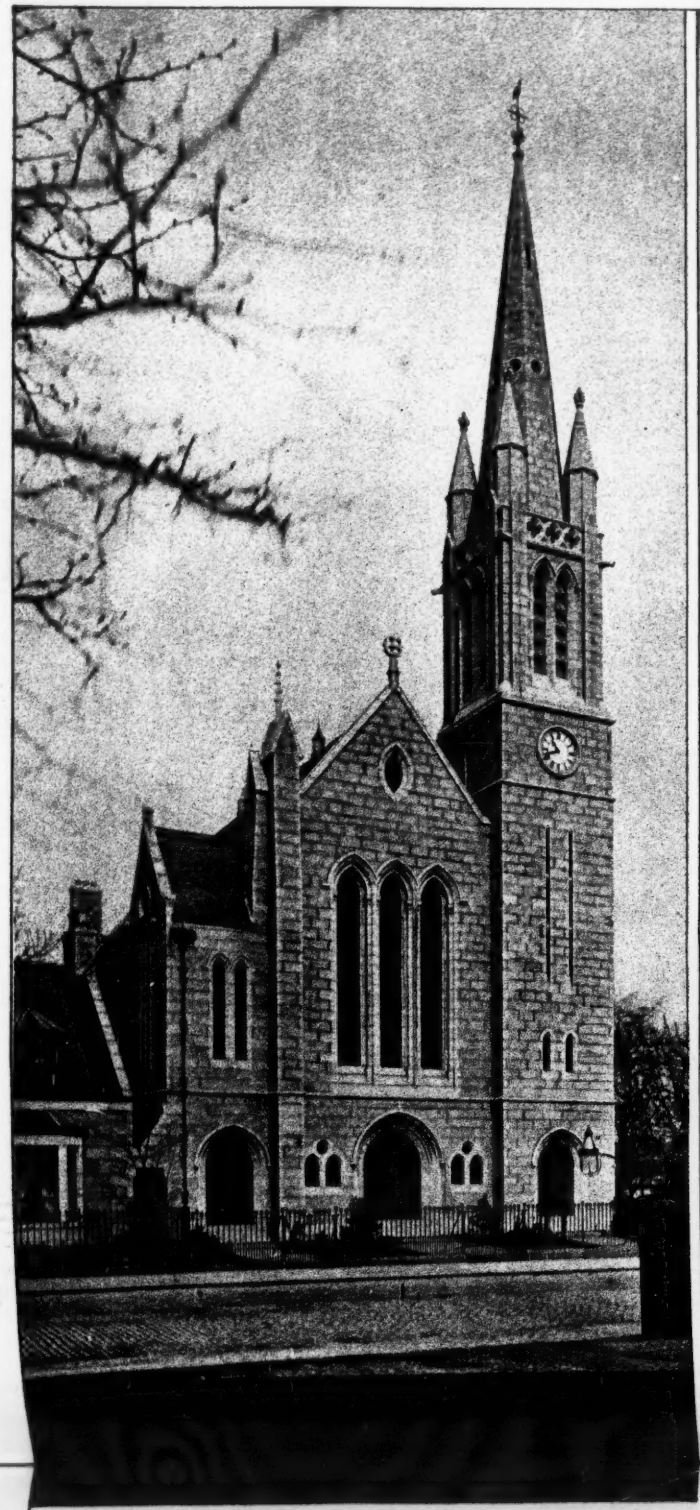

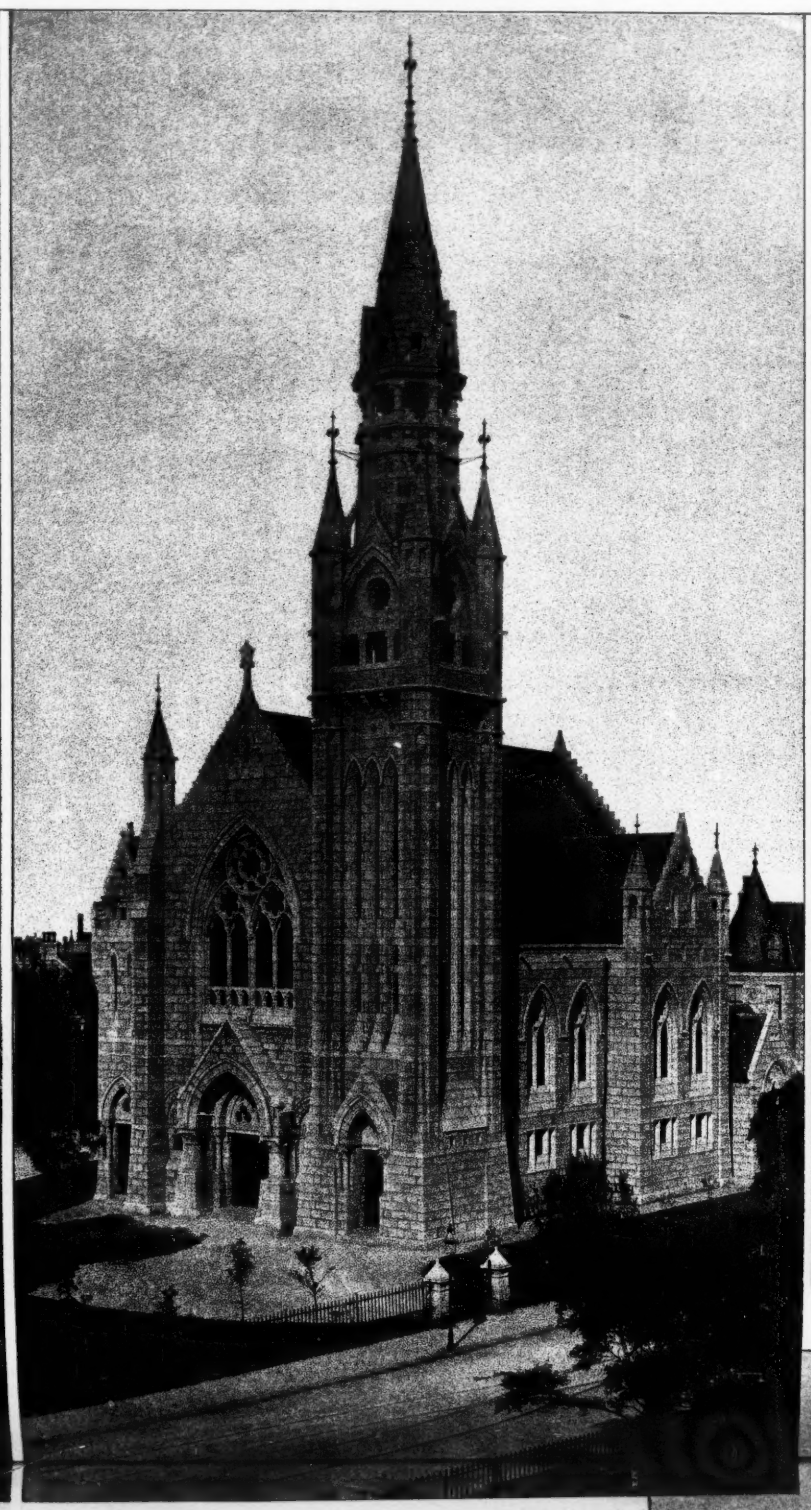

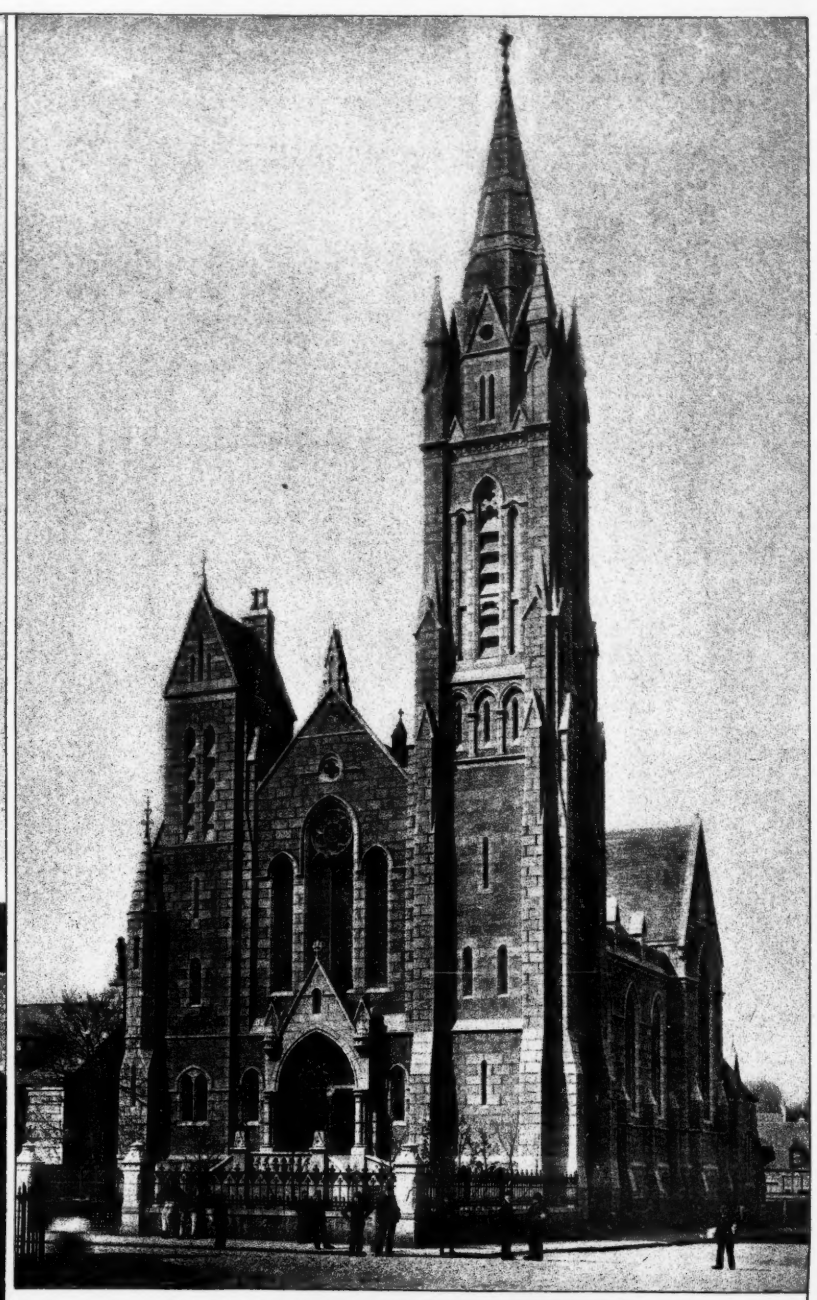

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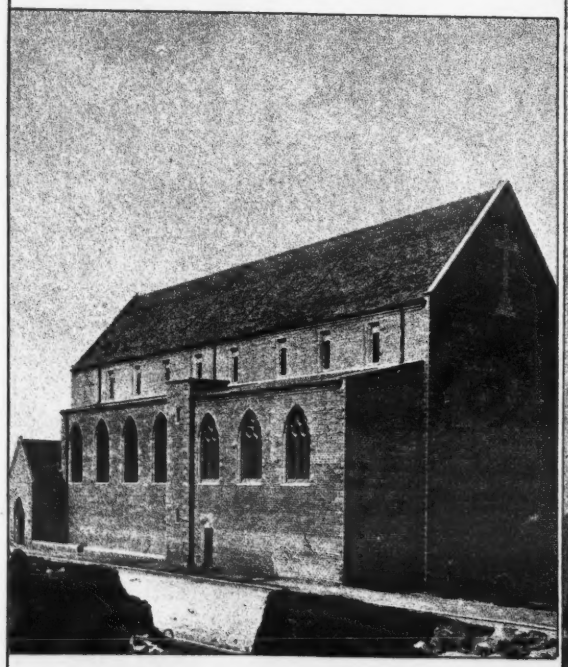

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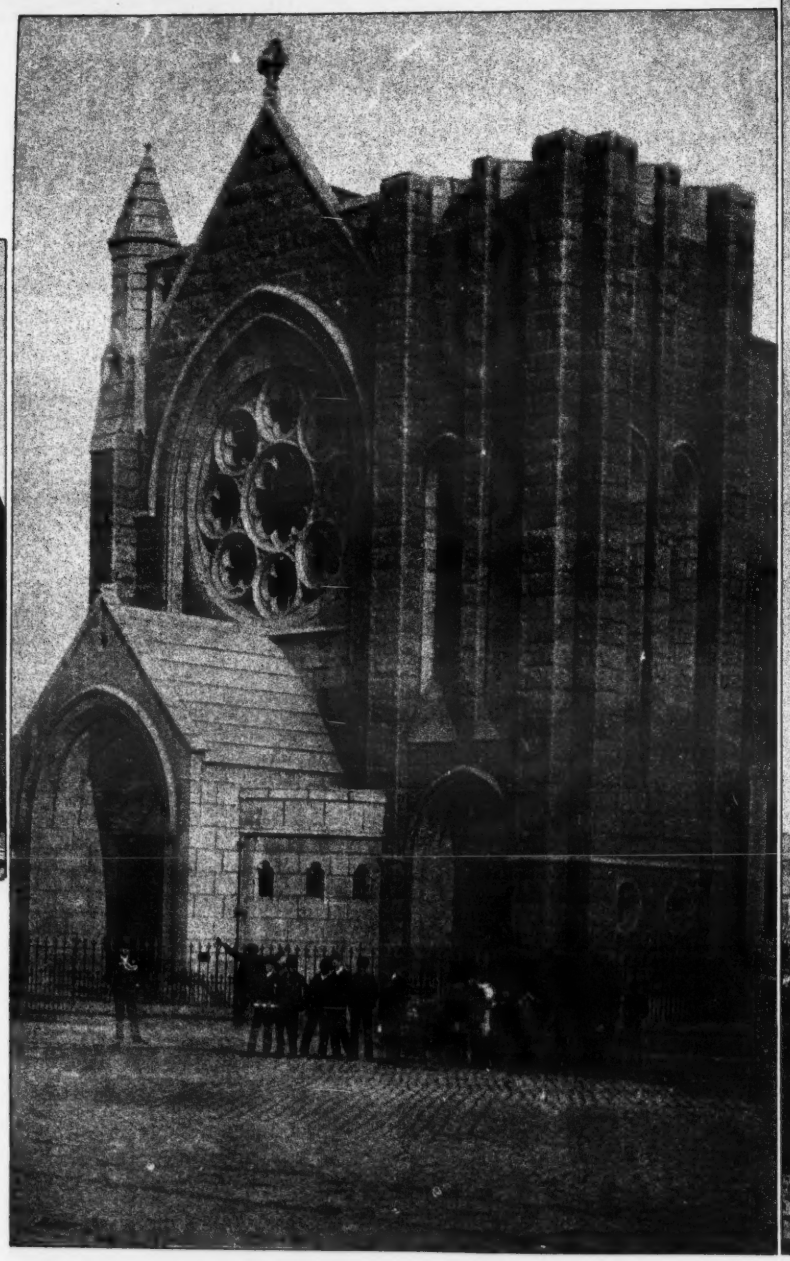

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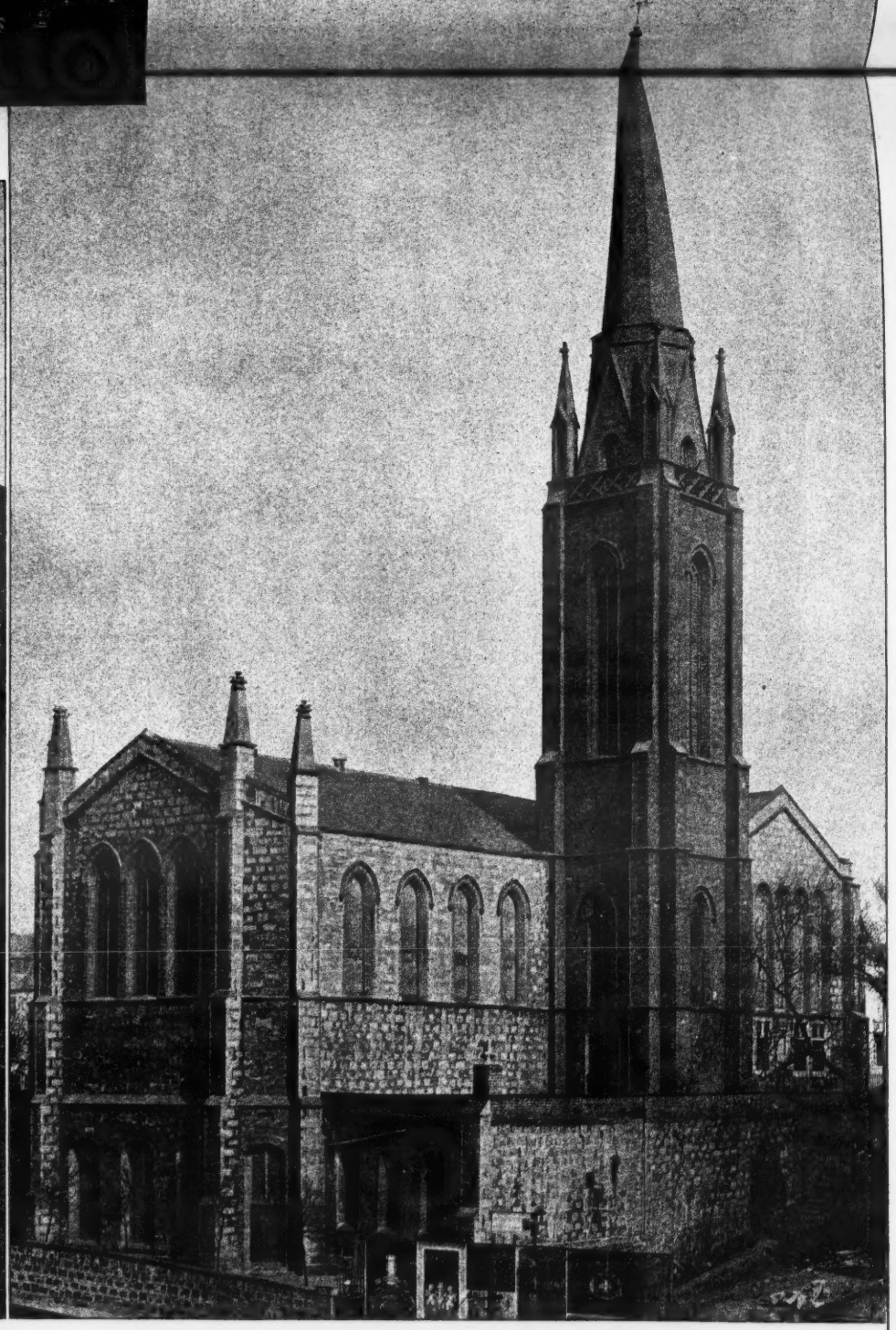

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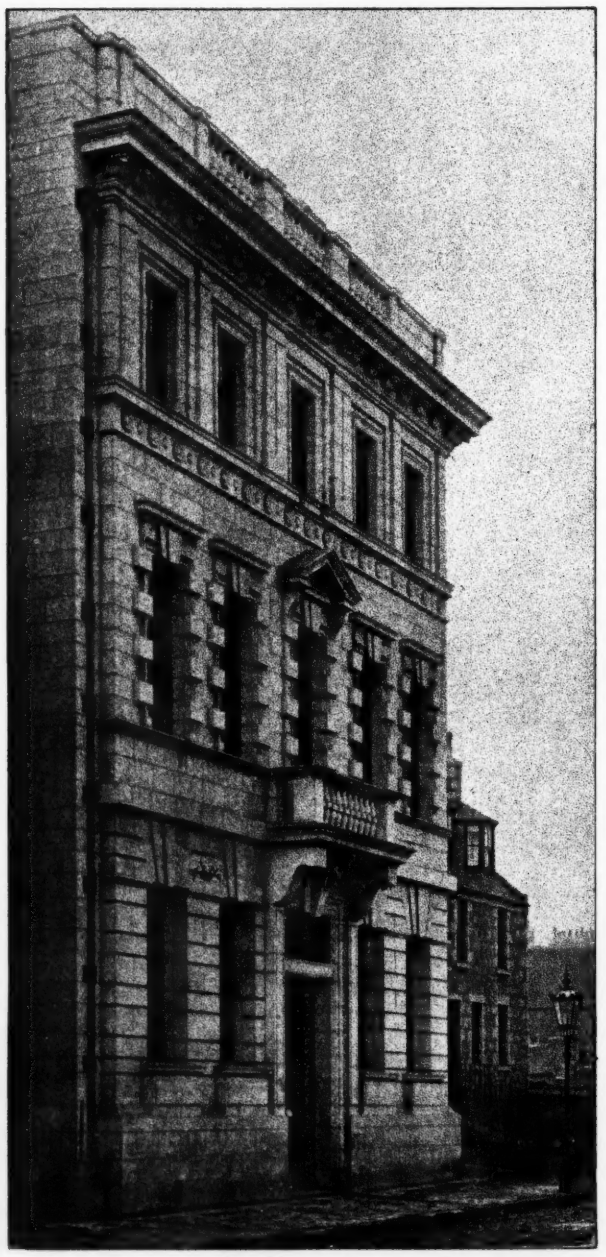

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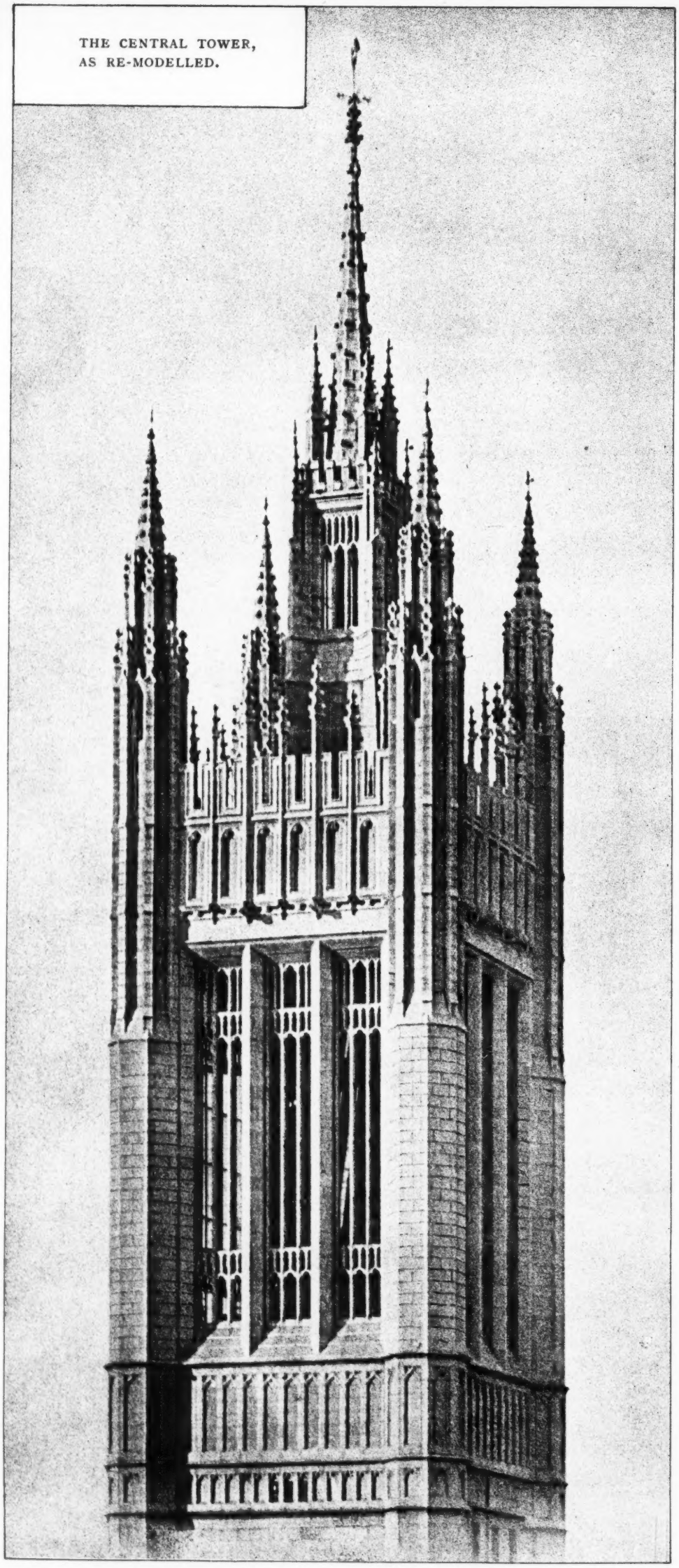
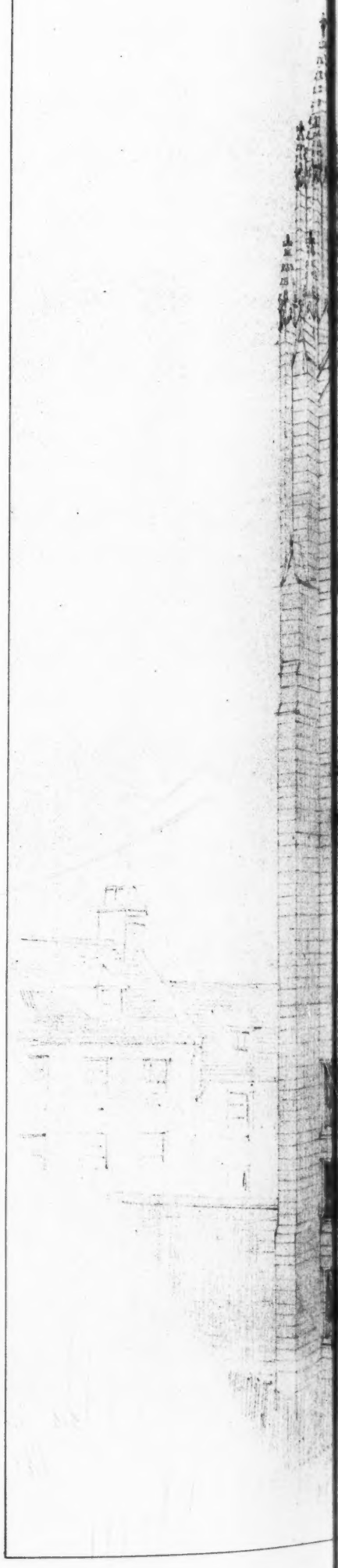
INK-PHOTO. SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

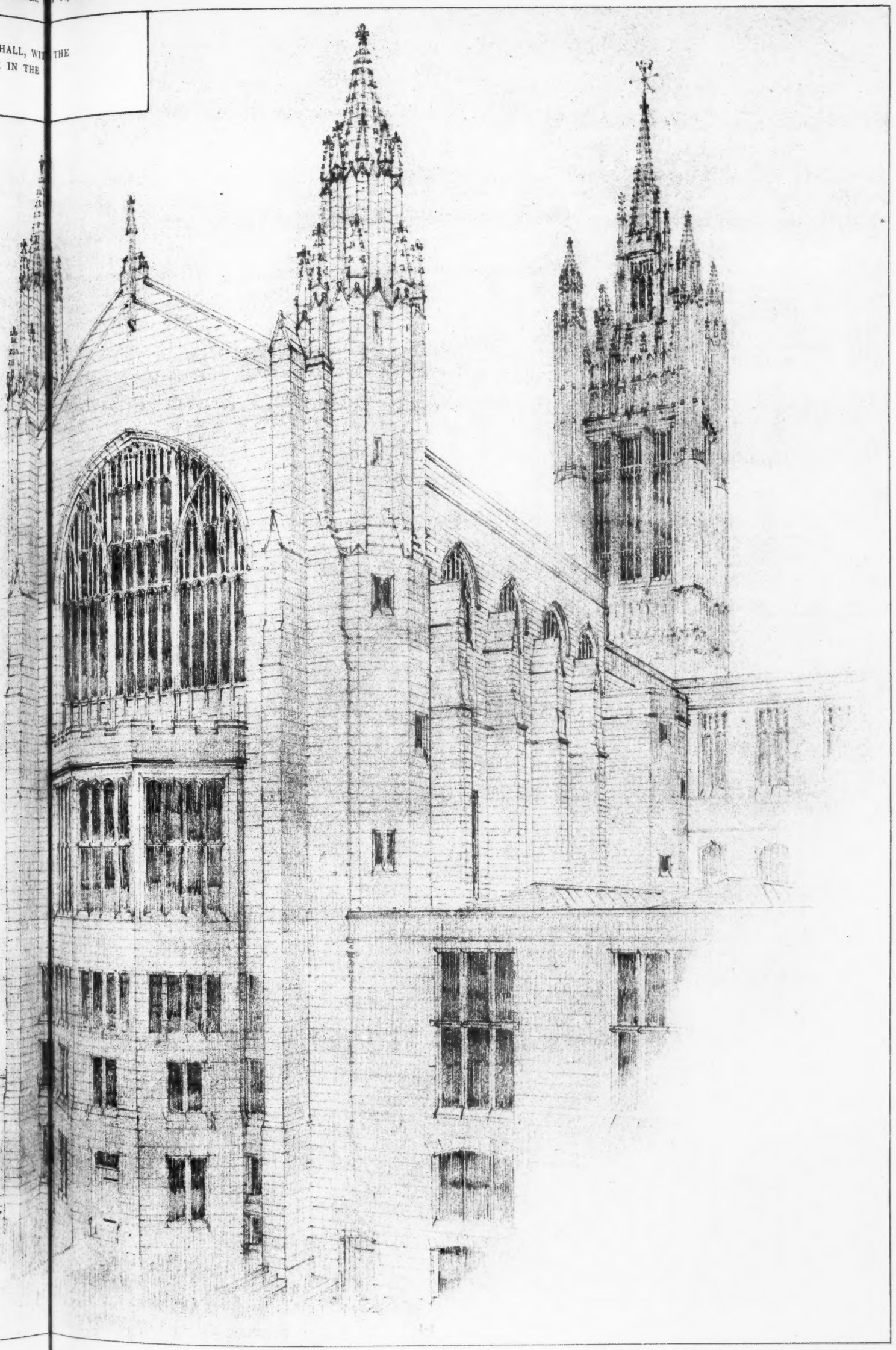
THE CENTRAL TOWER,
AS RE-MODELLED.



THE MITCHELL HALL, WI THE
CENTRAL TOWER IN THE
BACKGROUND.



HALL, WI THE
R IN THE



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TS TO MA SCHAL COLLEGE (Mr. A. M. Mackenzie, A.R.S.A.).

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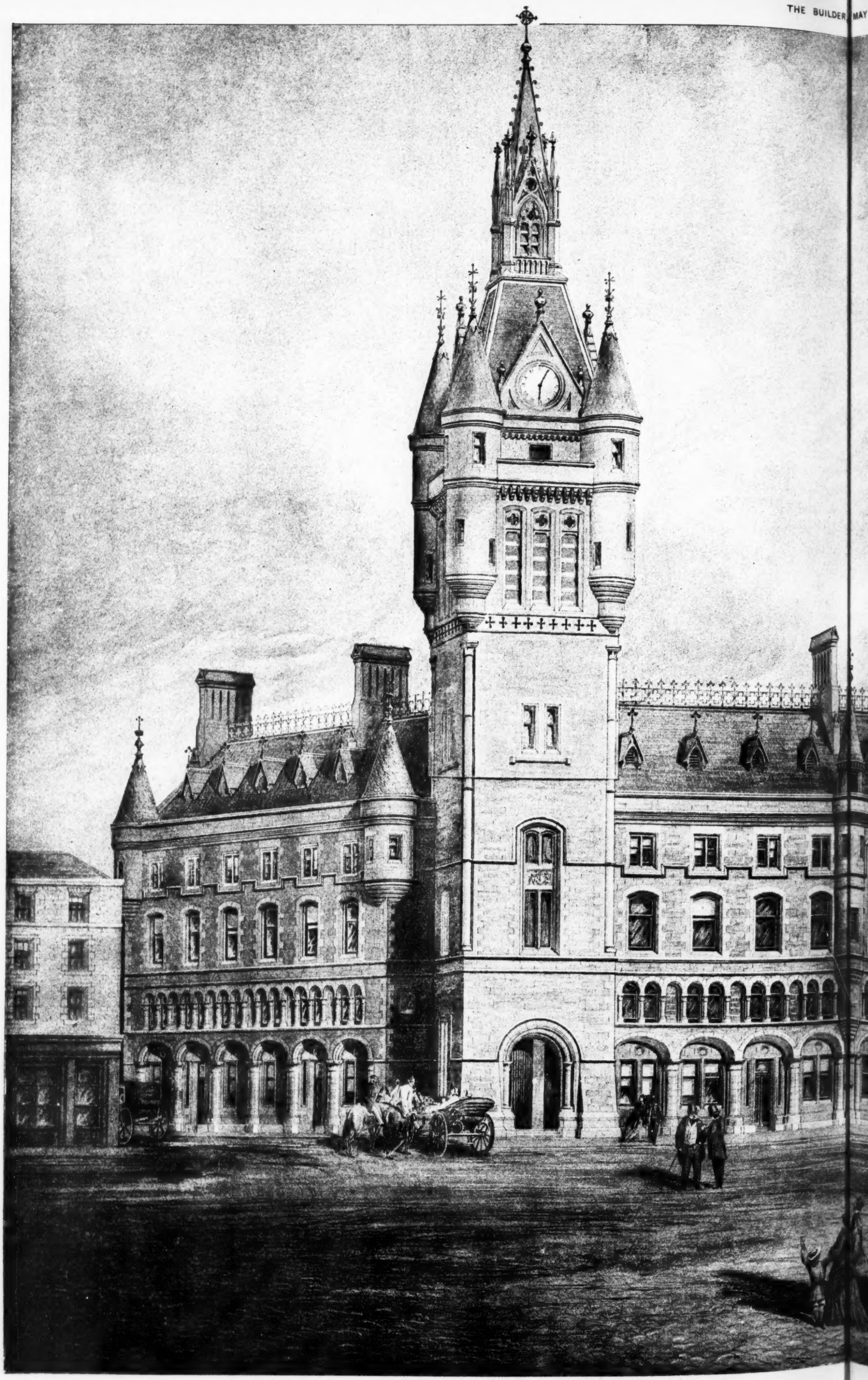
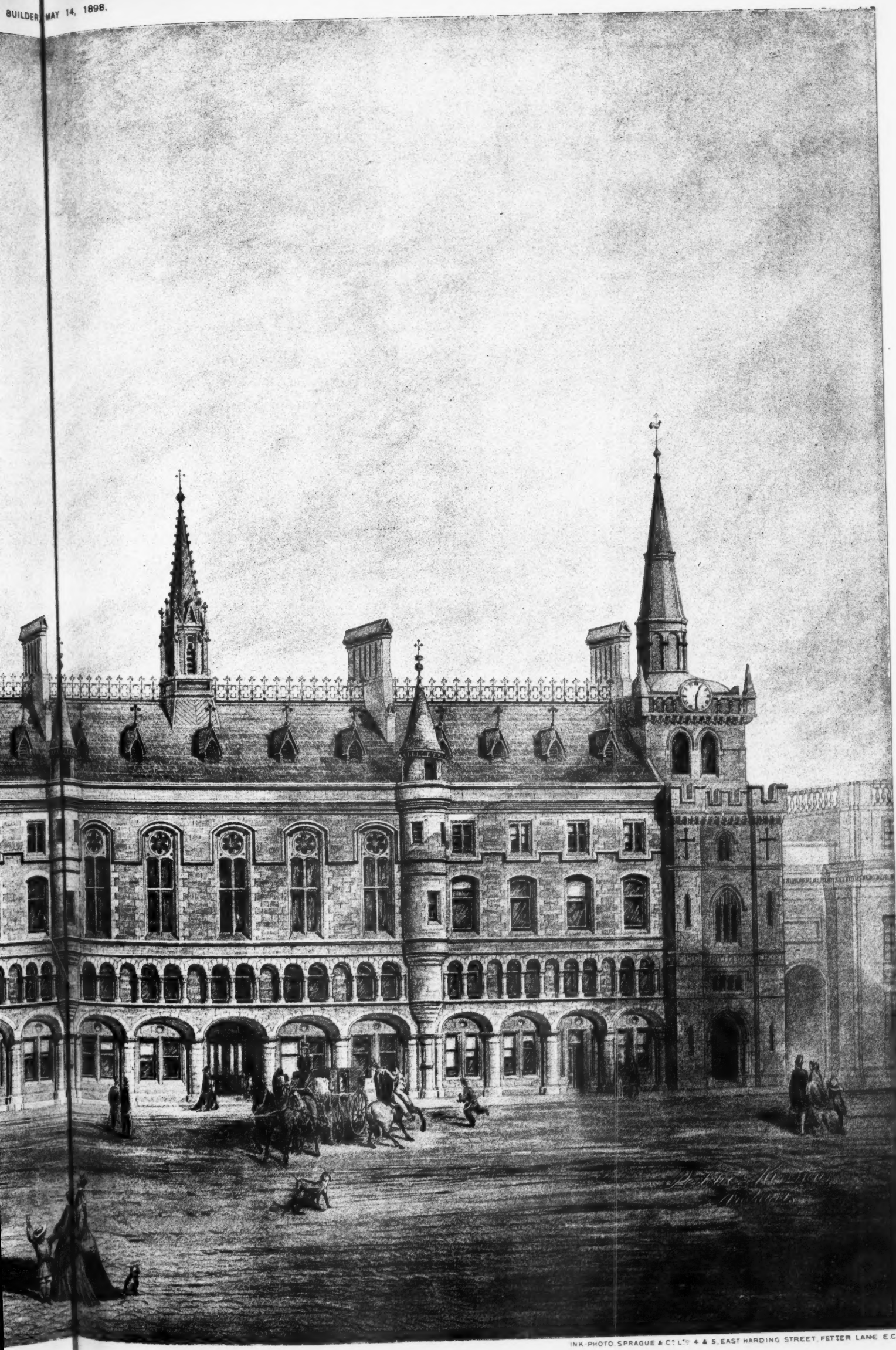


ABERDEEN ARCHITECTURE: THE TOWN



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RE: THE TOWN HOUSE (MESSRS. PEDDIE & KINNEAR).

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